

Are wisdom teeth (third molars) vestiges of human evolution?

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Evolutionists have taught that humans evolved from ape-like ancestors that possessed larger jaws and teeth than we do. In the process of evolution the jaw has become smaller, allowing less room for the third molars and causing numerous dental problems. Our better understanding of the complex teeth-jaw relationship has revealed this explanation is far too simplistic. Research now indicates that the reasons for most third molar problems today are not due to evolutionary changes but other reasons. These reasons include a change from a coarse abrasive diet to a soft western diet, lack of proper dental care, and genetic factors possibly including mutations. Common past dental practice was a tendency to routinely remove wisdom teeth. Recent empirical research has concluded that this practice is unwise. Third molars in general should be left alone unless a problem develops and then they should be treated as any other teeth. At times removal is required, but appropriate efforts to deal with problem teeth should be implemented before resorting to their extraction.

Introduction

A major conclusion of evolution is that the human jaw has shrunk from its much larger ape size to the smaller modern human size as humans evolved. In short, evolution has produced 'an increase in brain size at the expense of jaw size'.¹ In the process, the jaw has become too small for the last teeth to erupt which are normally the third molars, often called wisdom teeth. This view is usually explained as follows

*'...our ancestors had larger jaws, so there was room in the human mouth for 32 permanent teeth, including third molars — wisdom teeth. But now our jaws are smaller. The result: There's no longer room in most of our mouths to house 32 teeth. So the last teeth we develop — our wisdom teeth — often become impacted, or blocked from erupting.'*²

In the words of Liggett, as '*primitive man learned to ... break up his food with his hands... the jaw and brow ridge gradually became less prominent*' due to evolution.³ The third molars are often labeled vestigial (of use in the past but not today) and used as evidence to support human evolution from a hypothetical less evolved primate ancestor⁴⁻⁸ The following discussion in a once-widely used biology textbook is typical of this view:

*"The "wisdom teeth," or last molars, are in man approaching a vestigial condition, since they generally do not appear until relatively late, between the ages of twenty and thirty years, and in many persons are never cut at all. In a large percentage of individuals, they are useless, and they often become impacted and have to be removed surgically."*⁹

The vestigial organ view was also found in the medical text books of this generation:

*'It is a well known fact that nature tries to eliminate that which is not used... Likewise, civilization, which has eliminated the human need for large, powerful jaws, has decreased the size of our maxillae and mandibles. As a direct result, in a surprisingly large number of adults, the lower third molar occupies an abnormal position and may be considered a vestigial organ without purpose and function. This has been termed the phylogenic theory. It implies that, because throughout the history of man the jaws decreased in size from a lack of function, some present-day adults do not have room for a full complement of teeth, and the third molar, being the last to erupt, is denied room to accommodate itself...'*¹⁰

The loss of an organ in evolution purely as a result of disuse, also called Lamarckian Evolution, has now been thoroughly disproved. The belief that wisdom teeth are vestigial organs that lack a function in the body (as was previously believed for the appendix), is less common today but still evident. It is also commonly assumed by the general public.

The putative problem is that humans today have smaller jaws but just as many teeth as their evolutionary antecedents.¹¹⁻¹³ The result is the common assumption that most humans do not have enough room in their mouth for wisdom teeth which lack a function and only cause us much health trouble.¹⁴ This view was evidently first widely propounded by Darwin, who concluded:

'...the posterior molar or wisdom-teeth were tending to become rudimentary in the more civilized races of man. ... They do not cut through the gums till about the seventeenth year, and I have been assured that they are much more liable to decay, and are earlier lost than the other teeth; but this is denied by some eminent dentists. They are also much more liable to vary, both in structure and in the period of their development, than the other teeth.'

*In the Melanian races, on the other hand, the wisdom-teeth are usually furnished with three separate fangs, and are generally sound; they also differ from the other molars in size, less than in the Caucasian races. Prof Schaaffhausen accounts for this difference between the races by "the posterior dental portion of the jaw being always 'shortened ... I am informed by Mr. Brace that it is becoming quite a common practice in the United States to remove some of the molar teeth of children, as the jaw does not grow large enough for the perfect development of the normal number.'*¹⁵

Although Darwin believed that soft diets may have influenced lack of jaw development in modern humans, many later evolutionists concluded the combination of the evolution of a jaw smaller than our ape-like ancestors and tooth number and size which have not correspondingly evolved was a far more critical reason for the current wisdom teeth problem.

Challenges to the evolution view

The conclusion that a smaller jaw cannot contain the large teeth we inherited from our ancestors, and consequently wisdom teeth are not needed, has recently been challenged on several fronts. Macho and Moggi-Cecchi¹⁷ concluded that compared to other primates the third molars are the smallest in *Homo sapiens*. Further, if the third molars are forced to develop in a more restricted space 'they tend to be smaller than anterior' teeth and 'in humans this reduction often leads to agenesis [failure of an organ to develop] of the third molars.'¹⁸ Dental crowding in whites 'seems more related to smaller alveolar space than to smaller jaws overall or to larger teeth'.¹⁹ Furthermore, in an extensive study of aberrant maxillary third molars, Taylor found a lack of evidence for a genetic trend towards elimination of the third molar from human dentition as assumed by many evolutionists.²⁰

The problem is usually primarily with the lower third molars. A major problem with this belief is it is difficult to identify what advantage a smaller jaw would have for survival.²¹ Evolution of a smaller jaw would at best be a result of devolution, dysgenics caused by the accumulation of mutations. Determining tooth evolution is also ex-

tremely problematic. Although measurements of unworn unerupted fossil teeth can be measured accurately, once in occlusion, teeth 'are subject to wear, making it virtually impossible to accurately record crown components on teeth ...' in the fossil record.²²

It is now widely acknowledged that these teeth are not rudimentary or vestigial: they aid in chewing our food as do all of our other 28 teeth. The outdated vestigial organ conclusion, though, has influenced the extraction of billions of teeth, the removal of many of which may have been unnecessary according to current research.²³

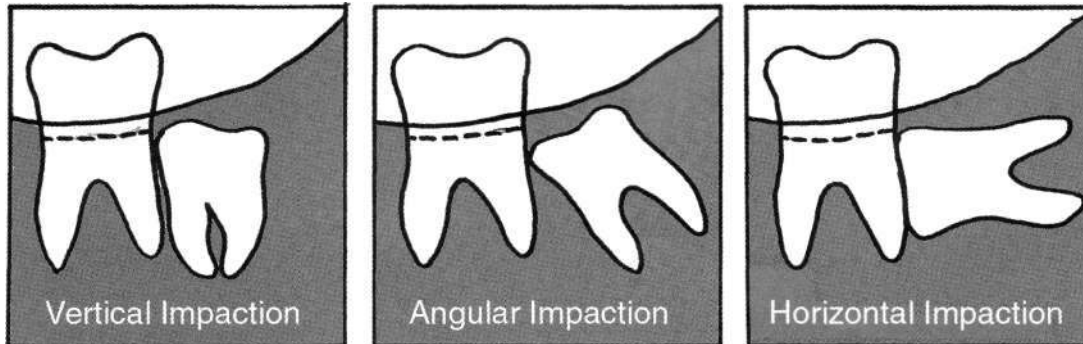
One result of this belief

Wisdom teeth extraction was for many years one of the more common surgical interventions in the Western world.²⁴ Leff²⁵ and others claim that a significant percent of third molars that are extracted could be saved. This observation is supported by the fact that extraction rates are influenced by local beliefs and for this reason vary considerably.²⁶ In America some estimate 20 % of all young people with otherwise healthy teeth develop impacted wisdom teeth requiring medical attention, yet in the past some estimate nine out of ten American teenagers who have dental insurance lost their wisdom teeth.²⁷ One report concluded the cost of this operation may exceed that of most routine medical or dental procedures.²⁸

Many dentists once routinely advised extraction of all wisdom teeth, *regardless* of whether they were causing problems — some even routinely removed wisdom teeth during adolescence if it only *appeared* that they *might* later become impacted^{29,30} McGuire even once advised, 'in most cases' wisdom teeth should be pulled (emphasis mine).³¹

Another problem cited for their removal is the possibility of cysts and tumors developing in the sac surrounding an impacted wisdom tooth. This abnormality, though, is relatively rare — usually around one percent of all impacted third molars are surrounded by cysts, although one study found the rate was 11 %.^{32,33} Further, as cyst development is generally extremely slow, this concern can often be monitored and dealt with before it affects a significant amount of bone. Tumors are also rarely a problem and in a study reviewed by Leff involved only about 'roughly one in a million impacted wisdom teeth'.³⁴

One reason they were believed to cause problems was that the wisdom teeth normally erupt last, between 18 and 25 years of age. Consequently it was assumed that if not enough room existed in the jaw, teeth crowding would



result. Since they erupt at about the time when the youth goes off into the world to become 'wise' the name 'wisdom teeth' was used to describe them.³⁵ In 13-15 % of patients they never develop and only from 9 to 24 % of all cases do they become impacted, usually because they are pointed in the wrong direction when they break through the gum, causing them to push against the second molar.³⁶

Reasons often given in the past for removal include the belief that wisdom teeth can push the other teeth forward, causing crowding. Claims that they usually cause damaging crowding have not held up under the scrutiny of recent empirical studies.³⁷ Although third molars have the greatest incidence of impaction of all teeth, the impaction risk is much smaller than the proponents of prophylactic odontectomy (the routine removal of asymptomatic unerupted teeth) claim.³⁸ This conclusion is based on several large studies of impacted wisdom teeth involving thousands of cases.

Prophylactic extraction was not uncommonly based more upon assumptions about human evolution than scientific research.^{39,40} As Leff concludes, *'there is virtually no evidence'* to support the claim that wisdom teeth push other teeth forward.⁴¹ In a long-term study Little *et al.*⁴² found that all teeth tend to drift forward at least into middle age whether or not the wisdom teeth have been removed (see also Cuzzo⁴³). In an excellent study Southard concluded that *'crowding cannot be prevented simply by extracting unerupted third molars'*⁴⁴ and that *'removing these teeth for the exclusive purpose of relieving interdental force and thereby preventing incisor crowding is unwarranted'*.⁴⁵

Numerous other studies support this conclusion. Samsudin and Mason⁴⁶ found, in their sample of 423 patients that were scheduled for wisdom teeth removal, that only 5% were assessed by the orthodontists as needing removal because of crowding. The problem of front teeth crowding evidently usually occurs for several reasons including because alveolar bone base is too small for the tooth size and shape, lack of attrition, soft tissue maturation, and mesial drift.^{47,48}

'Jaw and maxillary shelf size are individual genetic traits that vary according to a normal curve as do all human dimensions. Some individuals inherit very small maxillary sinus, and those toward the smaller end of the normal curve may sometimes experience wisdom teeth problems. An example is when a petite woman marries a large man and the children inherit a jaw structure that cannot completely accommodate their teeth.'^{49,50} These cases, though, are relatively few and are not the norm.⁵¹

Wisdom teeth problems are more common among European whites compared to Orientals and blacks.⁵² This conclusion is supported by research on dental problems and race that concluded that racial differences exist

'... in the contemporary human races with regard to occlusion, tooth size, and tooth shape ...It is tempting to suppose that interbreeding would

*exacerbate malocclusion and increase the number of impactions.'*⁵³

This may be true partly because certain jaw shapes and sizes are associated with third molar impaction and jaw traits are an inherited trait.⁵⁴ However, this is only one factor. The major factors, the size of the jaw, maxillary sinus and teeth, all vary widely in all races. A set of studies by Chung⁵⁵ and Neiswander⁵⁶ found significant differences in mandibles existed in the population they studied which were evidently due to a dominant gene which produced different risks of malocclusion.

In another study of race, Barrett did not find a single case of an impacted third molar in his sample of 69 adult Yeundumu aborigines.⁵⁷ Yeundumu generally have large maxillary sinuses but they also usually have large teeth. A problem may result when either intergroup or intragroup marriage produces a child with large teeth and a small maxillary sinus which causes crowding, or a large maxillary sinus and small teeth which results in excess tooth spacing.⁵⁷ Barrett notes the diet of the Yeundumu is now less abrasive and softer, consequently wisdom teeth and other tooth problems may be more likely in the newer generations.

Curtis⁵⁸ found that both predynastic Egyptians and Nubians rarely had wisdom teeth problems, but they often existed in persons living in later periods of history. He concluded that the maxillary sinus of the populations he compared were similar and attributed the impactions he found to diet and also disuse causing atrophy of the jaws which resulted in a low level of teeth attrition. Dahlberg⁵⁹ in a study of American Indians found that mongoloid peoples have a higher percentage of agenesis of third molars than do other groups and few persons in 'primitive' societies had wisdom teeth problems. As Dahlberg notes, third molars were *'very useful in primitive societies'* to chew their coarse diet.⁶⁰

Prophylactic removal concerns

For generations many dentists recommended extraction of impacted wisdom teeth because the procedure in the young was *'much easier than in later years, when the bone becomes more dense. Also, the younger the patient the better the procedure will be tolerated'*.⁶¹ This advice has now been replaced with the conclusion that *'extracting only those third molars that remain impacted and become pathologically involved is associated with less expected costs and disability than prophylactic removal of wisdom teeth'*.⁶¹

People not uncommonly have trouble with many body parts, but one can not argue that treatment which may be necessary for a minority of the population should be utilized for everyone as a prophylactic measure.⁶³⁻⁶⁵ As Daily in a summary of 145 empirical studies concluded, third molar extraction to prevent disease is no more logical than extraction of first or second molars to prevent disease.⁶⁶

The research now argues that since the appearance of

wisdom teeth is part of normal development, third molars that cause problems should be dealt with in the same way as any other problem teeth — namely endeavour to save them.⁶⁷ This contradicts the reasoning that the human maxillary sinus is usually too small, and therefore the third molars should be removed even if they are not causing problems because they will often cause problems later.

Although a competent surgeon can reduce serious problems later in life by appropriate removal of third molars, routine prophylactic removal is now regarded by many researchers as ill-advised.⁶⁸ A review of 12 studies on prophylactic removal found *'there is little justification for the removal of pathology free impacted third molars'*.⁶⁹ According to Samsudin and Mason,⁷⁰ pain was once the major reason that otherwise asymptomatic wisdom teeth were removed (73.7 % of all cases). Surgeons usually set a removal decision threshold based on several criteria, and if a tooth has characteristics which exceed their threshold, it is removed.⁷¹ This requires training, experience and knowledge.

Daily concluded that most prophylactic third molar extractions are medically unnecessary and the proper course is to clinically and radiographically monitor the teeth to determine pathological changes that indicates clear need for extraction.⁷² Routine wisdom teeth extraction is only one of many, many examples in which the implications of evolution theory have contributed to erroneous medical practices, in this case unnecessary removal of what may amount to billions of teeth. A study by Tulloch *et al.*,⁷³⁻⁷⁵ as part of an effort to identify ineffective or wasteful medical procedures estimated that:

*'Universal extraction of wisdom teeth would cost more than \$278 million and would result in three million days of misery for America's teenagers. ... Removing only problem teeth would cost an estimated \$51.5 million and create 776,000 days of misery. ... If surgeons removed only those wisdom teeth that actually caused problems ... the nation would save at least \$150 million a year in medical expenses with no ill effects. And tens of thousands of people, mostly teenagers, would be spared the aches, pains and complications that can result from the surgery.'*⁷⁶

Tulloch concludes that the universal *'recommendation for the early extraction of mandibular molars can no longer be endorsed'*.⁷⁷

No doubt the hundreds of recent dental journal articles discouraging prophylactic removal have had some effect on dental practice. As a result of careful evaluation of patients with wisdom teeth complaints, a 1998 British study found that of 8298 patients (a total of 25,001 third molars) that were referred to hospitals for assessment.

'Over half of all patients ... had either no extractions or a single third molar extracted. Less than a quarter of all patients referred underwent removal of all four third molars. Twenty percent of

*all third molars assessed were not extracted. Of all lower third molars listed for extraction, 9574 (78%) were associated with symptoms or disease. Pericoronitis [inflammation around the crown of a tooth] was the commonest indication for extraction and was cited in 39.5% of all extractions.'*⁷⁸

The researchers concluded that by using strict criteria to determine if removal was necessary, excessive numbers of third molars were no longer being removed in Britain.

Complications related to wisdom teeth removal

Removal of wisdom teeth solves certain problems such as infection that results because a partially erupted impacted tooth does not allow a bacteria-tight seal around the tooth, but sometimes creates other problems, some that are very serious. The major problem resulting from removal of third molars, aside from the loss of these useful teeth, is the complications related to tooth extractions. Teeth extraction can cause postoperative pain, swelling, and temporomandibular joint dysfunction.⁷⁹ The most common complications include *'infection and dry socket, trauma to the neurovascular bundle and temporary or permanent paresthesia or anesthesia of the lip, trauma to the lingual nerve, tongue numbness (temporary or permanent), root segments left in the socket and risk of damage to adjacent teeth'*.⁸⁰ One Michigan study found that about ten percent of all such operations result in complications, mostly minor, but which included some serious problems such as infection, persistent bleeding, severe tooth socket inflammation, permanent numbness of the lip and tongue and occasionally catastrophic hemorrhaging which occasionally can be lethal.^{81,82}

Extraction also has the potential of damaging gums and causing bone loss which adversely affects bone support for the second molars.⁸³ Numerous research studies have evaluated the risk of surgery versus treating the problems sometimes encountered in wisdom teeth eruption. They have in general concluded that watchful waiting *'would typically cause half as much discomfort and disability as extracting all impacted teeth, and only a fraction as much distress as pulling all wisdom teeth in adolescence'*.⁸⁴ Leff⁸⁵ concludes that, if other viable options exist aside from extraction there is *'an excellent chance they'll never be a problem.'* This conclusion is a major reversal of the previous perception held by many dentists for decades, namely that wisdom teeth are *'essentially useless trouble-makers — "little time bombs"'*.⁸⁶

Problems associated with wisdom teeth that should be attended to by a dental professional include third molars that remain incompletely erupted and only partially poke through the gum. Infection can be a problem when bacteria accumulate beneath the gum flap still covering the tooth as it erupts. Local antiseptics and trimming back the gum can often effectively deal with the concern of pericoronitis

until the tooth erupts. This condition is estimated to occur in about seven percent of all cases of wisdom teeth problems, and can adversely influence decay or gum disease of the adjacent molar. A dentist should be consulted to aid the patient in making the best determination of how to treat this concern.

Pathology also can explain some wisdom teeth problems. Many examples of local pathology exist which can affect jaw structure and consequently can cause impaction of the wisdom teeth. These include achondroplasia, Treacher-Collins syndrome and occipitomandibular syndrome.

These uncommon situations, though, do not shed much light on why certain populations as a whole tend to have third molar problems.

Diet as a partial explanation for wisdom teeth problems

The two most commonly cited explanations for third molar problems, natural selection and mutations, both have been challenged by many researchers including Calcagno and Gibson.⁸⁷ The fact that impacted teeth are rarely seen in animals and nontechnologic human societies indicates that some change in humans that occurred in their recent past is responsible.^{88,89} Many researchers have concluded that the dietary shift to soft, processed foods has caused a decrease in masticatory demands (the disuse theory) resulting in changes in the teeth-jaw relationship which could lead to malocclusion and impacted wisdom teeth.⁹⁰

The earlier human diet tended to be highly abrasive 'which caused attrition of teeth', according to Singh *et al.*⁹¹ resulting in the total arch length (the widths of all the teeth added together) to become less. Especially have 'processed foods caused consequential reduction in masticatory functional demand' producing a higher rate of impacted wisdom teeth.⁹² In other words, as is true of most body organs, lack of use causes malfunction or deterioration of wisdom teeth which is not inherited in the manner of the discredited Lamarckian theory.

Begg, in a study of 'stone age men' concluded that human teeth continually migrate in two directions throughout life, horizontally and vertically.⁹³ Begg sampled skulls of Australian Aborigines who had died before the westernization of Australia by the British and who had consumed a diet he judged 'late paleolithic', (for this reason he used the term stone age to describe their diet). He concluded that the coarse, hard gritty, fibrous and unprocessed diet causes inter-proximal and occlusal



Full mouth x-ray scan showing impacted wisdom teeth (arrows).

Courtesy of orthodontist, Peter Grant.

attrition which 'permits all the lower deciduous teeth to move gradually forward relative to the uppers'.⁹⁴

The result of teeth wear produces mesial drift (towards the front of the mouth) because the space required to accommodate the teeth in each jaw gradually becomes less, allowing a proper fit of the third molar teeth. This wear does not occur with the modern diet, and consequently Begg argues many westerners often don't have enough room in their mouth for wisdom teeth, and therefore crowding of permanent canines and incisors is more likely to occur today.

Several other research studies on primitive skulls have concluded a 'clear association' between civilization and dental attrition, and lack of dental attrition was strongly related to teeth crowding and wisdom teeth impaction.⁹⁵ In a summary of the research on diet and dental crowding, Lombardi⁹⁶ concluded

'Dental crowding is endemic among technologically advanced populations and uncommon in primitive groups. The significant elements in the development of most dental crowding are mesial migration and the lack of inter proximal attrition. Mesial migration of the posterior teeth provides the functional replacement for the tooth surface lost to attrition because of the rigors of a primitive diet. In modern man there is little attrition of the teeth because of a soft, processed diet; this can result in dental crowding and impaction of the third molars.'

In short, this theory concludes that

'... interproximal wear is highly correlated with the chewing force required by the diet. A diet consisting largely of tough foods, such as nuts, seeds, fibrous vegetables, and partially cooked meats, requires high chewing forces that cause lateral movement of the teeth relative to each other. This rubbing of adjacent teeth is the cause of inter

*proximal wear. The amount of particulate matter or grit in the diet is a secondary factor in interproximal wear, although it accounts for most of the occlusal wear. Advanced populations that consume a diet composed largely of cooked meats and vegetables, as well as processed foods, do not require the large chewing forces that lead to lateral movement of the teeth and interproximal wear. The low incidence of crowding in primitive populations seemingly results from the high degree of inter proximal attrition and not from a more harmonious concordance of tooth and jaw size.*⁹⁷

Supporting this conclusion, Calcagno⁹⁸ determined a significant reduction in tooth size occurred between the Mesolithic geological age and the newer Agriculturalists culture in Nubia, Africa, and a smaller tooth size reduction when the Agriculturalists were compared to the intensive Agriculturalists cultures, presumably due solely to diet changes. Another study of the Australian Aboriginals living at Yeundumu found that an estimated only 64% of the total tooth size variability of permanent teeth can be attributed to genetics, indicating that environment is of major importance.^{99,100}

Goose¹⁰¹ found from measurements of jaw sizes and teeth that a decrease occurred in the palato-coronal dimensions between the middle ages and the seventeenth century. He concluded that this change was unlikely to be due to racial changes or hybridization since no evidence exists of racial mixing during recent British history. Conversely, profound changes in diet have occurred since medieval times which can account for the differences found. Studies in numerous other populations also indicate that diet and other environmental factors are of major importance in tooth variation problems.¹⁰²⁻¹⁰⁴

Sofaer *et al*¹⁰⁵ concluded that '*genetic variation forms the lowest proportion of total size variation in the most posterior tooth of each class*' and that this fact would '*result in a less rapid response to selection in these teeth.*' Further, the modern diet causes other teeth problems:

'... in modern civilized man a change of diet has occurred in the last 2000 years or so and that as a result the teeth are underused and not worn down ... the discovery of cooking made chewing less necessary [and]... in the last 250 years in Western civilization there has been a rapid development of technology, the calorific values of manufactured foods has become more concentrated, refined sugars widely available and the abrasive content of some food, particularly flour, has been markedly reduced by modern milling.

The results have been that the dentition has not been reduced in size as it should have been by attrition, and it is this that accounts for the increase in impactions. There is a rider to this second view and it is that dental attrition requires a high degree of muscle activity which in turn stimulates jaw

*growth. In the absence of constant chewing the jaw does not reach full size and therefore, in those who eat high-calorie cooked food, there is an increased risk of malocclusion.*¹⁰⁶

In short, when the chewing workload is reduced, the mandible and jaw muscles atrophy, and when chewing workload is increased, the muscles strengthen and the jaw develops. Other dental problems such as malocclusion are also '*widely believed to be a disease of civilization, and to be largely confined to recent man of European descent.*'¹⁰⁷ Clinch¹⁰⁸ found the level of malocclusion to be three times greater in civilized peoples compared with a '*primitive*' group of aborigines. Corruccini¹⁰⁹ found '*some 40-60%*' of people in the United States have malocclusions and that in '*nontechnologic human societies*' malocclusion is rare.

Conclusions

Several factors have been found to be important in causing third molar problems and malocclusion. The most important factor is probably diet, but the influence of other factors including mutations, needs to be examined more fully to understand why wisdom teeth are more often a problem today. The once common belief that wisdom teeth problems are related to putative evolutionary modifications has now been discredited, and we can do no better to summarize this change in belief than to quote MacGregor. MacGregor concluded in an extensive study that the '*increase of brain size at the expense of jaw size*' evolutionary view is invalid and that the:

*'Evidence derived from paleontology, anthropology, and experiment indicates very convincingly that a reduction in jaw size has occurred due to civilization. The main associated factor appears to be the virtual absence of inter proximal attrition, but initial tooth size may have some effect. Jaw size and dental attrition are related and they have both decreased with modern diet. Jaws were thought to be reduced in size in the course of evolution but close examination reveals that within the species Homo sapiens, this may not have occurred. What was thought to be a good example of evolution in progress has been shown to be better explained otherwise.'*¹¹⁰

The findings noted in the many studies cited above, such as tooth and jaw sizes are generally harmonious in societies with a coarse diet, have forced many evolutionists to reevaluate their theory and postulate that reduction in jaw size

*'...during hominid evolution has been accompanied by a general reduction of tooth size. Natural selection has presumably operated to maintain a harmonious tooth to jaw size relationship by tending to eliminate genotypes that produced teeth too large for the changing skeletal system.'*¹¹¹

Some evolutionists now even argue that '*selection*

against excessively larger teeth would have been stronger than selection for small faces'.¹¹² Why 'smallfaces' would have been selected for is difficult to determine.

The 'most identifiable remains of fossil mammals consist of teeth' because they are by far the most durable parts of the body.¹¹³ Consequently, the teeth can provide major evidence for or against a theory of morphological change. In this case the research indicates that the problems experienced with wisdom teeth in modern society are not due to mutations selected by the environment but largely to changes in diet, namely to softer, less abrasive processed foods which do not give the teeth the workout which they require to ensure proper relationship in the mouth.

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