

# Orthognathic surgery: is patient information on the Internet valid?

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**SUMMARY** The aims of this study were to evaluate the quality and reliability of UK websites providing information on orthognathic and jaw surgery to patients. An Internet search engine (www.google.com) was used to identify websites containing medical information on ‘orthognathic surgery’ and ‘jaw surgery’. Of over 144 000 links for orthognathic surgery and 700 000 for jaw surgery, the first 100 were examined in detail. After excluding discussion groups, news and video feeds, and removing duplicate sites, only 25 relevant websites remained which were then evaluated using the DISCERN instrument (www.discern.org.uk/discern\_instrument.php). Through the 16 questions assessing the reliability and quality of the consumer information which are scored from 1 to 5, a relative index of the quality of the information is produced. The maximum score attainable for an excellent website is 80. Of the 25 websites that were scored, DISCERN indicated the majority of websites fell well below the maximum score. The highest score achieved by one of the websites according to the DISCERN tool was 64 of 80 and the lowest score achieved was 21 of 80. The websites achieving maximum and minimum score were Wikipedia and qualitydentistry.com, respectively. By directing patients to validated websites, clinicians can ensure patients find appropriate information; however, further development of websites relating to orthognathic surgery is required. Internet information should be updated on a regular basis to account for improvements in orthodontic and surgical care.

## Introduction

The advent of the Internet has increased public access to health information through online resources such as websites, video feeds, and Internet discussion groups. With increasing access to the Internet, the public have greater access to health information than ever before. One of the key concerns is that although the volume of medical information on the web is huge, the quality, accuracy, and completeness of information are questionable (Stinson *et al.*, 2009).

According to a 2007 poll by Harris Interactive (Harris Interactive, 2007), 160 million Americans were using the Internet to find health information, an increase of 37 per cent since 2005. The poll also estimated that 84 per cent of all adults have explored medical information online. However, the growth of the web and its use as a medical delivery tool should be viewed with caution. Unfortunately, there is only limited evidence outlining what patients seek when they access health-related information online (Eysenbach and Jadad, 2001). One study found that the five most common reasons patients utilize the Internet for health-related searches are 1. information about a condition, 2. Information about treatment, 3. Information about symptoms, 4. advice about symptoms, and 5. advice about treatment (Shuyler and Knight, 2003).

The treatment of dentofacial deformity can be complicated and difficult for patients to understand even when the risks and benefits are discussed by the multidisciplinary team at a surgical centre. As a result, orthodontists and oral and maxillofacial surgeons appreciate when orthognathic surgery is discussed in clinic that patients will wish to seek further information, and this is most readily obtained from the Internet. However, patients searching for health information on the Internet can find thousands of sites and it is difficult for patients to determine the validity of the information they find (van der Marel *et al.*, 2009). Nevertheless patients contemplating orthognathic surgery need to know if the information that they find on the Internet is accurate. However, concern surrounding the validity of information available online leads many orthodontists and surgeons to feel that consulting the Internet for health-related advice can be harmful (Boer *et al.*, 2007). The lack of regulation of online information can lead to incorrect, biased, and out of date resources and patients can therefore make potentially inappropriate decisions about proceeding with combined orthodontic treatment and orthognathic surgery, which, by nature is protracted, associated with a relatively high degree of morbidity and is expensive, based on potentially poor quality information.

The aim of this study was to evaluate the quality and reliability of websites providing information about orthognathic surgery to patients.

## Materials and methods

An initial search using three different search engines: Google ([www.google.com](http://www.google.com)), Yahoo ([www.yahoo.com](http://www.yahoo.com)), and Ask Jeeves ([www.ask.com](http://www.ask.com)) was performed at the end of May 2010. The terms 'orthognathic surgery' and 'jaw surgery' were used. It was found that Google incorporated the vast majority of the links to websites which the other two search engines produced and therefore the search for this investigation was conducted using Google. The search resulted in over 144 000 links for orthognathic surgery and over 700 000 for jaw surgery being found. As it is unlikely that patients will investigate beyond the first few pages of a search, only the first 100 links generated by Google were considered. After excluding discussion groups, news and video feeds, and removing duplicate sites, only 25 relevant websites suitable for patients remained which were then evaluated.

The chosen websites were analysed using a validated rating tool called 'DISCERN' ([www.discern.org.uk/discern\\_instrument.php](http://www.discern.org.uk/discern_instrument.php)). The DISCERN instrument assesses the quality of written information on treatment choices for health problems and consists of 16 questions surrounding the reliability and quality of consumer health information (Table 1). Each question can be scored from 1 to 5 depending on how well it adheres to the specific criteria in question. The maximum score attainable is 80 and websites were ranked to produce a relative index of the quality of the consumer information they contained.

## Results

Seventy-five of the 100 websites were excluded from the analysis. These consisted of journal articles, news and video feeds, academic press and abstracts listings, discussion groups, and duplicate sites.

Of the remaining 25 websites that were scored, DISCERN indicated the majority of websites fell well below the maximum score. The maximum score achieved by one of the websites according to the DISCERN tool was 64 of 80 and the lowest score achieved was 21 of 80. The websites achieving maximum and minimum score were Wikipedia and qualitydentistry.com, respectively. The scores for individual websites are listed in Table 2. Currently the five websites with the highest quality information in relation to orthognathic surgery are

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wikipedia.org*	64
baoms.org.uk	54
orthognathicsurgery.info	52
yorkhospital.nhs.net	52
oxfordradcliffe.nhs.net	49

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\*The Wikipedia website does not mention genioplasty as part of orthognathic surgery and we would therefore recommend it be combined with the [www.BAOMS.org.uk](http://www.BAOMS.org.uk) site.

## Discussion

It can be difficult for patients to access reliable and accurate information on the Internet. Although information on websites can sometimes be of a higher quality than information leaflets available in clinics (Powell and Clarke, 2006), our study found that the quality of information available on the Internet relating to orthognathic surgery is variable.

In total, the Google search provided nearly a million links on orthognathic surgery and jaw surgery. Although such a large number of links are available, it is unlikely patients will search beyond the top 20. Therefore, we limited our investigation to the first 100 websites in line with the study by Ni Riordan and McCreary (2009). Interestingly, only 25 websites of the top 100 were found to contain relevant information for patients. Of these, only six were found to provide medical information of such quality at a level that could be recommended to patients undergoing orthognathic surgery (Table 2). While good quality information contained within these six websites is an aid to orthodontists and surgeons when discussing treatment with patients and their carers, patients need to be alerted to potentially inadequate information contained in many websites, and on some occasions, mis-information.

This is the first study investigating the quality of information available on the Internet relating to orthognathic surgery. All studies are associated with flaws and we only investigated the information available on the Internet at a single moment in time. Websites should be dynamic and through regular updates, contemporaneous information can be provided as research and technical developments improve patient care. We were therefore not able to investigate the longer term nature of improvements in website quality over time. It should be noted that as information can be frequently and easily updated in comparison to leaflets or other printed media (Powell and Clarke, 2006), the disadvantage is that anybody can produce a website who has no real expertise in this specialist area.

We used Google as the Internet search engine for this investigation after an initial search using Yahoo and Ask Jeeves as well found that there was considerable overlap among the websites that Google would find. While other search engines such as Bing ([www.Bing.com](http://www.Bing.com)) and AOL ([www.search.AOL.com](http://www.search.AOL.com)) are available, Google accounts for almost 72 per cent of all Internet searches (<http://www.seoconsultants.com/search-engines/>) and as a result, it is unlikely that any relevant websites were not identified using the Google search.

**Table 1** DISCERN instrument variables.

Question number	What is investigated
1	Are the aims clear?
2	Does it achieve its aims?
3	Is it relevant?
4	Is it clear what sources of information were used to compile the publication (other than the author or producer)?
5	Is it clear when the information used or reported in the publication was produced?
6	Is it balanced and unbiased?
7	Does it provide details of additional sources of support and information?
8	Does it refer to areas of uncertainty?
9	Does it describe how each treatment works?
10	Does it describe the benefits of each treatment?
11	Does it describe the risks of each treatment?
12	Does it describe what would happen if no treatment is used?
13	Does it describe how the treatment choices affect overall quality of life?
14	Is it clear that there may be more than one possible treatment choice?
15	Does it provide support for shared decision making?
16	Based on the answers to all of the above questions, rate the overall quality of the publication as a source of information about treatment choices

**Table 2** DISCERN scores for the 25 websites.

Websites	Q1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Total
wikipedia.org	5	5	4	5	5	4	5	4	4	4	4	1	4	2	3	5	64
cosmeticdentistryguide.co.uk	4	4	4	1	2	4	1	3	4	3	2	1	4	2	3	3	45
orthognathicsurgery.info	4	5	4	1	2	4	1	4	4	4	4	1	4	2	4	4	52
addendbrookes.org.uk	5	4	4	2	2	4	1	4	3	4	3	1	4	2	2	4	49
baoms.org.uk	5	5	5	2	2	4	1	4	5	4	4	1	4	2	2	4	54
dentalguide.co.uk	3	3	3	1	1	3	1	2	3	3	2	1	2	1	2	2	33
omfsaboutface1.hostinguk.com	4	4	4	1	1	3	1	3	3	3	3	1	3	1	2	3	40
bos.org.uk	5	4	4	2	2	4	1	4	3	2	3	1	4	1	3	3	46
healthcentre.org.uk	4	4	4	1	2	3	1	3	3	4	3	1	4	1	3	3	44
shaping-faces.com	5	5	4	2	2	1	1	2	3	4	3	1	3	1	2	3	42
maxfaxsho.co.uk	4	4	3	2	2	3	1	3	2	2	2	1	3	1	3	2	38
orofacialsurgery.com	2	2	2	2	2	2	1	2	1	4	1	1	1	1	2	1	27
yorkhospital.nhs.net	5	5	4	2	2	4	1	4	4	3	4	1	4	2	3	4	52
bartsandthelondon.nhs.uk	3	2	2	2	2	3	1	3	1	4	1	1	2	2	1	2	32
orthodonticsspecialist.co.uk	2	2	2	2	2	1	1	2	1	3	1	1	1	1	1	1	24
facial-surgery.com	4	3	4	2	2	3	1	3	2	3	2	1	2	1	2	3	38
orthocj.com	4	4	4	2	2	2	1	3	4	4	2	1	2	3	2	3	43
nbt.nhs.net	3	2	3	2	2	3	1	2	2	3	1	1	1	1	1	1	29
medicalwebsitedesigns.co.uk	3	3	2	1	2	3	1	3	2	3	1	1	1	1	1	1	29
qualitydentistry.com	2	2	1	1	1	2	1	2	1	2	1	1	1	1	1	1	21
onlinetoothdoctor.com	4	4	4	2	2	4	1	3	3	3	4	1	2	1	1	3	42
oxfordradcliffe.nhs.net	5	5	4	3	3	4	2	3	2	1	3	1	4	3	2	4	49
aaoms.org	4	4	4	2	2	4	1	3	4	4	1	1	3	3	1	3	44
faceandjawsurgery.com	4	4	4	2	2	4	1	3	4	4	2	1	3	2	1	3	44
maxillofacialcentre.com	5	4	4	2	2	4	1	3	4	4	4	1	2	2	1	3	46

We used the DISCERN instrument as it can be used to produce a relative index of the quality of consumer information on websites. This is of interest to determine the validity of the medical information patients find on the Internet. This is important for all patients, but particularly crucial for patients who have any degree of learning disability or whose first language is not English who could easily be confused by information that is unclear. Although DISCERN has been criticized for not analysing the quality

of the information on websites in significant detail (Hargrave *et al.*, 2006) when compared to other tools such as the *Journal of the American Medical Association* (JAMA) benchmarks, the DISCERN tool has been shown to have good internal consistency (Ademiluyi *et al.*, 2003) and is user friendly. In this respect, clinical teams can use the DISCERN tool to evaluate websites that patients may suggest in order to determine if the information they are likely to find is of use for other patients.

Further development of the Internet as a valid information source would be of considerable benefit to patients seeking further information about orthognathic surgery. In order to indicate the validity of the information that orthognathic websites contain, websites could display their DISCERN score as a quality indicator for patients.

## Conclusions

The maximum score achieved by one of the websites (Wikipedia) according to the DISCERN tool was 64 of 80; however, the majority of websites fell well below the maximum score. By directing patients to validated websites, clinicians can ensure patients find appropriate information; however, further development of websites relating to orthognathic surgery is required. Internet information should be updated on a regular basis to account for improvements in orthodontic and surgical care.

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