

The index of orthognathic functional treatment need accurately prioritises those patients already selected for orthognathic surgery within the NHS

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Abstract

The index of orthognathic functional treatment need (IOFTN) is a newly-proposed system to help to prioritise patients for orthognathic treatment. The five categories are similar to those used in orthodontics, but include additional parameters such as sleep apnoea and facial asymmetry. The aim of this audit was to validate the index and find out the potential future implications, should such a system ever be adopted by commissioners.

We calculated the IOFTN category of 100 consecutive patients who had orthognathic surgery between 2010–14 using clinical notes, photographs, study models, and radiographs, and determined the number in categories 4 or 5, analogous to the current indications for orthodontic treatment within the NHS.

Sufficient clinical information was available to categorise 59/100 patients, and 56 of the 59 (95%) were in either category 4 or 5. All three of the remaining patients (in categories 1–3) who were operated on were treated because of the anticipated favourable impact on their quality of life.

The IOFTN has been proposed for use in future commissioning of orthognathic services within the NHS, and this study has confirmed its efficacy in prioritising treatment accurately, with 95% of patients being in categories 4 or 5. We recommend that the orthognathic treatment index be adapted to include additional psychosocial assessment so that patients who fall into the lower functional categories are not automatically excluded from this potentially life-changing treatment.

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Introduction

The financial stability and sustainability of the NHS is currently under threat, with a rise in demand for treatment as well as increased costs.¹ Consequently there has been a drive to reduce costs and in particular to divert money and resources from apparently “low priority” treatments to those thought to

be of more value.² Commissioning for orthognathic treatment in particular has been under scrutiny and, before centralised commissioning, some regions of the UK had deemed orthognathic treatment as a low priority and restricted funding for it.

The use of indexes is one way to prioritise the health-care needs of a population. One such method is the index of orthodontic treatment need (IOTN), which was developed by Brook and Shaw in 1989,³ and is now used routinely within the NHS. It has consistently been shown to be both valid and

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Table 1
Index of Orthognathic Functional Treatment Need (IOFTN) adapted from Ireland et al.²

Grade (need for treatment)	Functional indications for orthognathic treatment
5 (very great)	Defects of cleft lip and palate and other craniofacial anomalies Increased overjet > 9 mm Reverse overjet \geq 3 mm Open bite \geq 4 mm Complete scissor bite that affects whole buccal segment(s) with signs of functional disturbance, or occlusal trauma, or both Sleep apnoea not amenable to other treatment Skeletal anomalies with occlusal disturbance as a result of trauma or disease
4 (great)	Increased overjet \geq 6 mm and \leq 9 mm Reverse overjet \geq 0 and < 3 mm with functional difficulties Open bite < 4 mm with functional difficulties Increased overbite with evidence of dental or soft tissue trauma Facial asymmetry associated with occlusal disturbance
3 (moderate)	Reverse overjet \geq 0 and < 3 mm with no functional difficulties Open bite < 4 mm with no functional difficulties Upper labial segment gingival exposure < 3 mm at rest, but with evidence of gingival or periodontal effects Facial asymmetry with no occlusal disturbance
2 (mild)	Increased overbite but no evidence of dental or soft tissue trauma Upper labial segment gingival exposure < 3 mm at rest with no evidence of gingival or periodontal effects Marked occlusal cant with no effect on the occlusion
1 (none)	Speech difficulties Treatment purely for temporomandibular joint disease Occlusal features not classified above

reliable, and is also quick and easy to use.⁴ However, it has several limitations. For example, in its aesthetic component, none of the photographs illustrate class II division II, class III incisor relationships or anterior open bites. In the dental health component, some of the functional indications for orthognathic treatment are not included,² such as facial asymmetry with associated occlusal disturbance. Some severe dentofacial deformities and malocclusions would therefore not be eligible for NHS funding using the IOTN.

In 2014 Ireland et al. proposed the index of orthognathic functional treatment need (IOFTN), which incorporates the dental health component of IOTN, but includes additional functional indications for orthognathic treatment (Table 1).² They showed that the IOFTN was valid for face and content, and had good interoperator, and moderate-to-good intraoperator, reliability.² The IOFTN applies to “patients who will have completed facial growth before surgery (commonly 18 years of age and older)”.² Currently, NHS orthodontic treatment is limited to IOTN dental health component groups 4 and 5, and group 3 where the aesthetic component is grade 6 or more. Like the IOTN, the IOFTN has five categories,

Table 2
Breakdown of the Index of Orthognathic Functional Treatment Need (IOFTN) category for each patient selected for orthognathic surgery (from the 59 patients for whom sufficient clinical information was available to categorise).

IOFTN category	No of patients
5	40
4	16
3	2
2	1
1	0
Total	59

ranging from “very great need for treatment” to “no need for treatment”.²

We know of no external validation of this system, and so the aim of this audit was to provide such validation and describe the potential future implications of the use of this service locally.

Method

We retrospectively reviewed the clinical records of 100 consecutive patients who had orthognathic operations between 24 June 2010 and 19 August 2014. The sample was identified by the hospital audit team. Orthognathic operations were divided into Le Fort I osteotomy, bilateral sagittal split osteotomy, vertical subsigmoid osteotomy, and genioplasty. All patients had been assessed at a joint clinic with both a consultant oral and maxillofacial surgeon and a consultant orthodontist.

The IOFTN category of every patient selected for orthognathic treatment was retrospectively calculated from hospital records, clinical photographs, study models, and digital radiographs. This was assessed using the proposed criteria by three clinicians (authors 1–3) after standardisation of the characteristics that fulfilled each criterion by a consultant surgeon (author 4) using study model examples. Data were collected and analysed on Microsoft Excel[®] for Mac 2011 Version 14 (Microsoft Corp., Redmond, WA, USA). We recorded the number of patients selected for orthognathic treatment who were in IOFTN categories 4 or 5, which is analogous to the current minimum required for funding of orthodontic treatment by the NHS.

Results

Sufficient clinical information was available to categorise 59/100 patients (Table 2). Of these, 56/59 were categorised as either IOFTN 4 or 5. Of the remaining three patients who had been selected for orthognathic treatment, two were in category 3, and one in category 2. These 3 patients were selected for orthognathic treatment as both functionally and aesthetically their skeletal relationships were having an adverse impact on their quality of life. This impact had been judged

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