

# A national survey of restorative consultants' treatment provision for head and neck oncology patients

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## IN BRIEF

- Provides insight into the patient pathway through head and neck oncology treatment.
- Outlines potential dental complications of head and neck oncology treatment.
- Highlights concerns regarding the need for timely and appropriate preoperative dental screening.
- Identifies the need for improved communication between specialties and primary care.

**Aim** To investigate current UK practices in the treatment of head and neck oncology patients by consultants in restorative dentistry. **Method** A postal questionnaire requesting details of surgical and restorative head and neck oncology care from diagnosis to oral rehabilitation was circulated to all 315 consultants in restorative dentistry in the UK. If a reply was not received within 12 weeks a follow up was sent. **Results** One hundred and thirty-two (43%) completed questionnaires were returned. On average 46% of respondents treated head and neck oncology patients, this varied with geographical location. Sixty percent of consultants' weekly workload was less than 25% oncology related, while 13% indicated more than 75%. Of the cohort providing oncology care only 12% thought there was always time for dental screening pre-radiotherapy, furthermore 67% had difficulty liaising with primary care. Within the UK great variety existed between attendance at multidisciplinary team meetings, dental care professional support, and provision of dental implant reconstruction including timing, manufacturer, operator, and funding. **Conclusion** Significant variation in dental input into head and neck oncology patients' pathways exists, most notably with pre-radiotherapy screening. This study highlights a change in trend for patient rehabilitation with dental implants, and an increase to 52% of restorative dentistry consultants' attendance during a multidisciplinary team meeting.

## INTRODUCTION

Ablative surgery for oral and peri-oral cancer can result in significant morbidities such as facial deformity, impaired oral function and psychological issues.<sup>1,2</sup> Impaired oral function may include speech, swallowing, and mastication due to xerostomia, loss of teeth, trismus and basal jaw bone during surgical resection of the primary tumour.<sup>3</sup> These factors have been shown to have a negative impact on patients' oral health related quality of life.<sup>4,5</sup> Forty percent of these patients require adjunctive radiotherapy,<sup>6</sup> resulting in adverse biological changes such as microstomia, trismus, taste disturbance, radiation caries, xerostomia, intolerance of the denture bearing mucosa to mechanical loading and osteoradionecrosis.<sup>7-10</sup> These effects are considered lifelong and while ongoing professional prevention

is key, careful consideration is required if extractions in the irradiated field are subsequently required.<sup>11</sup>

Advances in surgical reconstruction of oncology-related defects with autogenous bone grafts or revascularised free flaps<sup>12,13</sup> have become an important adjunct to contemporary prosthodontic treatment in an otherwise challenging conventional prosthetic setting. Five year cancer survival rates are increasing<sup>6</sup> and quality of life related to oral functioning research demonstrates the beneficial effect of implant retained prostheses.<sup>14,15</sup> These benefits are larger in non-irradiated than in irradiated oncology patients, although patients with no history of oncology treatment seem to benefit most.<sup>16</sup>

Survival of dental implants in reconstructed head and neck oncology patients has been reported to be upwards of 90%,<sup>17-19</sup> however, this can vary with site and adjunctive radiotherapy.<sup>20-23</sup> The ideal time lapse between radiotherapy and implant placement has not been defined and remains debated in the literature.<sup>24</sup> Visch reported no significant difference in implant survival when placed less than 12 months or at least 1 year after radiotherapy.<sup>25</sup> Osteoclast damage occurring earlier than vascular alterations and subsequent decrease in bone remodelling

is thought to be the crux of the tissue damage.<sup>10</sup> To circumvent radiotherapy complications associated with further surgery, placement of dental implants at the time of ablative surgery and reconstruction is being pioneered.<sup>26-28</sup>

Restorative specialists are expected to be involved in the patient pathway from the outset as highlighted in national clinical guidelines.<sup>29,30</sup> This has no doubt led to their increased attendance at multidisciplinary team (MDT) meetings from 24% in 1995<sup>31</sup> to 30% in 2009.<sup>32</sup> With current time to treatment targets, formal cancer treatment may begin soon after diagnosis, leaving limited time for pre-treatment assessment and emergency management of the dentition. This is essential to minimise untoward dental consequences of oncology treatment by identifying pre-radiotherapy extractions and planning for post-operative restorative rehabilitation; although logistical problems may arise as the most at risk patients are frequently hard to contact.<sup>33</sup>

## AIM

To record the current practice of restorative dentistry consultants in immediate, initial, and long-term management of patients diagnosed with head and neck cancer related to geographical location within the UK.

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**MATERIALS AND METHODS**

The authors modified a previous questionnaire circulated among oral and maxillofacial surgeons investigating similar issues.<sup>32</sup> Additional questions pertinent to restorative dentistry were added to make the investigation more representative. The questionnaire format included both structured and free response answers in addition to a covering letter.

Names and addresses of consultants in restorative dentistry were taken from an Internet search of the General Dental Council (GDC) website. Questionnaires were circulated over a 1 week period in March 2011. A follow-up was sent if no reply was received within 12 weeks. Questionnaires were collated and statistical analysis tabulated by a single study author.

**RESULTS**

A total of 315 questionnaires were sent, 6 of which were returned incomplete as the recipients had retired. Of the 132 (43%) respondents, 60 (45%) treated head and neck oncology patients. The regional distribution of consultants providing oncology care can be seen in Figure 1.

**Consultant oncology commitments**

Sixty-one percent of respondents spent approximately a quarter of their clinical time treating oncology patients, while 13% of respondents attributed more than 75% of their clinical time to oncology care (Fig. 2). Figure 3 shows the approximate numbers of oncology cases treated annually. Twenty-nine percent of respondents treated more than 50 cases, while 32% treated less than 10. The distribution of treatment undertaken was in the following proportion: 24% general treatment, 42% maxillofacial prosthodontics and 34% on MDT meetings. In the majority of cases (89%), obturator fabrication was completed by a restorative specialist and technician, 12% by a technician only, and 7% by a non-specialist.

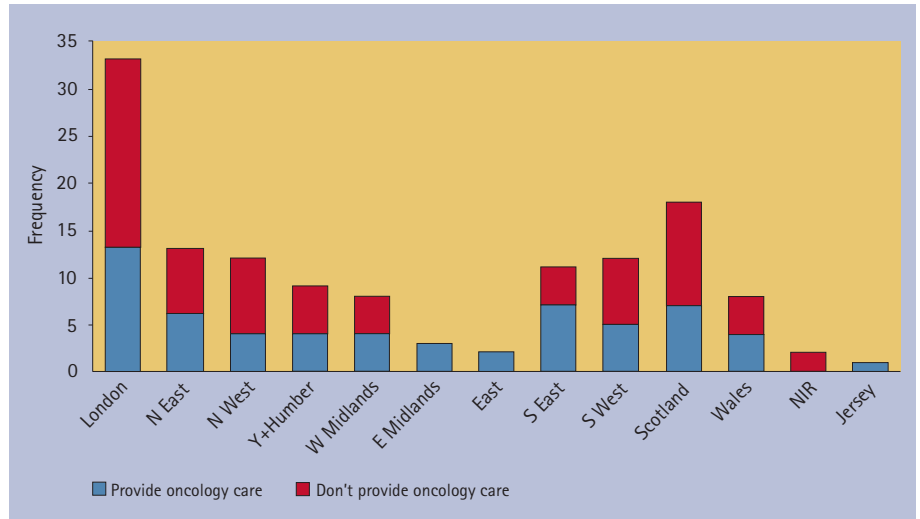
Figure 4 shows the distribution of respondents' attendance at MDT meetings, this varied between 12% and 100% across the UK. On average, 52% of respondents attend an MDT meeting.

**Patient demographics**

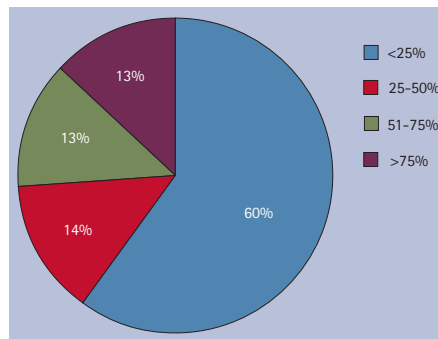
Patient demographics suggest many are at least partially dentate as 54% of respondents report less than 25% of their patients were edentulous (Fig. 5).

**Dental screening**

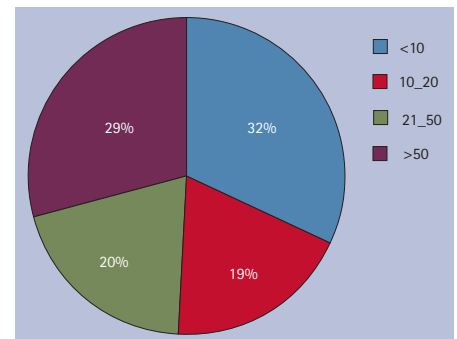
Thirty-one percent of respondents indicated there was no opportunity for a dental assessment of their patients before



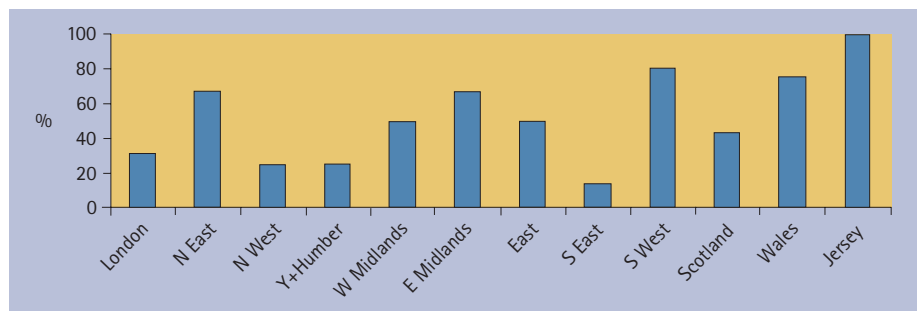
**Fig. 1** Frequency of restorative dentistry consultants providing head and neck oncology care



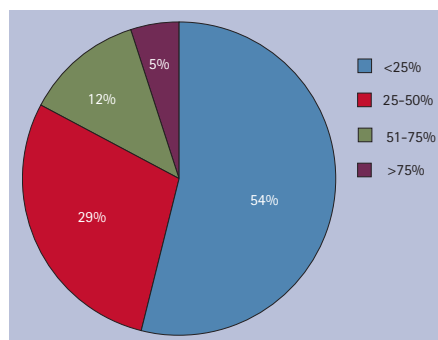
**Fig. 2** Percentage of weekly clinical time spent treating head and neck oncology patients



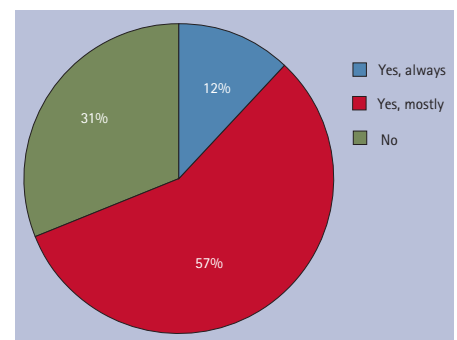
**Fig. 3** Number of head and neck oncology patients treated per year



**Fig. 4** Percentage of restorative dentistry consultants attending MDT meetings



**Fig. 5** Percentage of head and neck oncology patients who are edentulous



**Fig. 6** Restorative dentistry consultants' opinions regarding the opportunity for dental screening before radiotherapy

radiotherapy. Only 12% of respondents indicated there was always time for patients to be dentally assessed before radiotherapy (Fig. 6). Less than two thirds

(62%) of respondents indicated they were able to screen 75% of their patients before radiotherapy (Fig. 7).

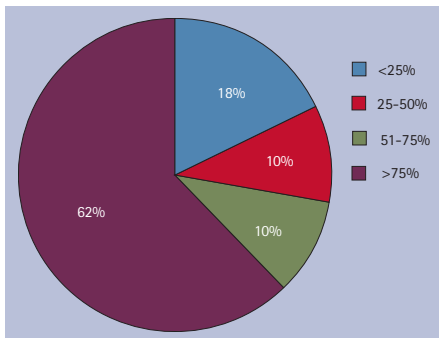


Fig. 7 Percentage of head and neck oncology patients dentally assessed before radiotherapy

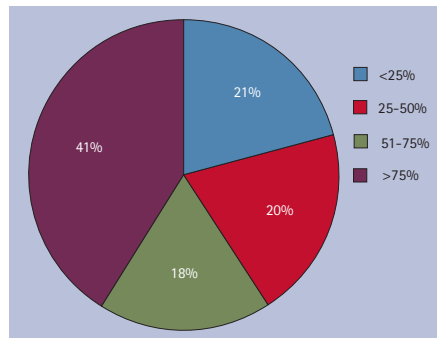


Fig. 8 Percentage of head and neck oncology patients dentally assessed before primary surgery

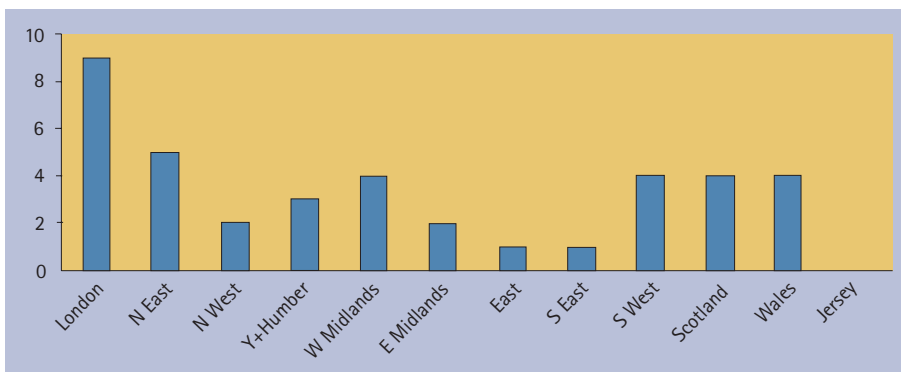


Fig. 9 Number of restorative dentistry consultants with hygienist support

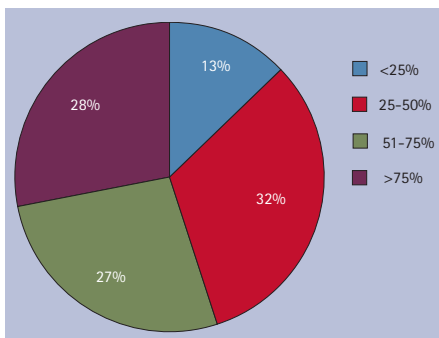


Fig. 10 Percentage of head and neck oncology patients dentally rehabilitated following cancer treatment

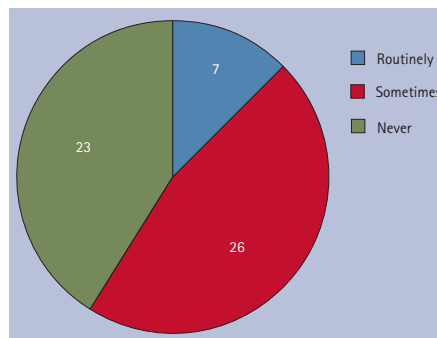


Fig. 11 Number of restorative dentistry consultants attending during theatre for placement of dental implants

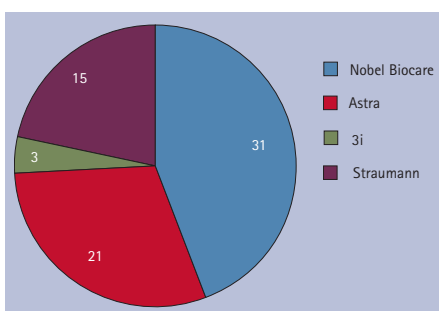


Fig. 12 Distribution of dental implant manufacturers

Less than half (41%) of respondents specified they were able to dentally assess 75% of patients before primary surgery. Conversely, 21% of respondents indicated 75% of their patients were not dentally assessed before primary surgery (Fig. 8).

The majority of responses commented this was due to ‘a lack of time between diagnosis and beginning formal cancer treatment’, others included: ‘limited priority for dental screening’, ‘many need a lot of work’, ‘arbitrary targets restrict time available for essential dental treatment’.

### Dental care professional (DCP) support

In the majority of areas consultants providing head and neck oncology care had access to hygiene support (Fig. 9).

Thirty-three percent of respondents indicated they could routinely liaise with primary care, 60% sometimes, and 7% never. Respondents reasons for this included, ‘most patients are not registered’, ‘patients are anxious or reluctant for treatment’,

and frequently ‘in England (primary care) the remuneration system does not encourage this’.

Eighty-nine percent of respondents had oral surgery support for dental extractions.

### Reconstruction and dental rehabilitation

Reconstruction of maxillectomy defects appeared varied; 44% reported they were reconstructed routinely and 56% sometimes.

More than half of respondents commented that 55% of their patients were dentally rehabilitated while less than 25% of patients were not dentally rehabilitated (Fig. 10). Seventy-five percent of respondents were involved with dental implant-based rehabilitation techniques. Specialties placing dental implants included restorative consultants (39%), maxillofacial surgeons (38%), oral surgeons (17%), and other (3%). Seven respondents ‘routinely’ and 26 ‘sometimes’ attend theatre to place dental implants (Fig. 11). Forty-one percent of respondents suggested dental implant placement during primary surgery was sometimes carried out but the majority (59%) suggested it was never undertaken. Advanced imaging, such as cone beam computer tomography, was available for 86% of respondents to plan implant placement.

The most frequent dental implant systems used were Nobel Biocare® (n = 31), Astra® (n = 21), Straumann® (n = 15) and 3i® (n = 3) (Fig. 12). Seventeen respondents placed zygomatic implants with considerable variance within the UK (Fig. 13).

Responses to implant provision demonstrate 70% were routinely available and no one felt implant provision was never accessible. Individual case funding had to be sought routinely (32%), sometimes (23%) and never (46%).

### DISCUSSION

Of the 132 completed questionnaires, respondents providing oncology care were similar in number to those that did not, adequate for a representative cross-section of UK restorative dentistry consultants.

Oncology care is time consuming because of the complex and challenging treatment planning required; this proficiency arguably comes with experience, which may explain weekly workload results. The present study suggests there is significant variance across the UK of attendance at MDT meetings by restorative dentistry consultants. The average attendance was calculated as 52%; a promising improvement from previous data of 30%<sup>32</sup> and 24%.<sup>31</sup> Attendance during MDT

meetings is an effective way of identifying head and neck oncology patients to arrange dental assessments as a third of respondents feel there is not adequate time for dental screening before formal oncology care begins. Barriers to a timely dental assessment include speciality appointments from ear, nose and throat (ENT), maxillofacial, radiology, head and neck specialist nurses, speech and language, dieticians and palliative care nurses; furthermore, time between diagnosis and formal treatment may be minimal. The importance of timely screening cannot be overstated given the serious oral repercussions of oncology treatment and further morbidity from any surgical intervention required at a later date.<sup>34</sup>

General dental practitioners (GDPs) have a vital role to play in the multidisciplinary care of such patients<sup>35,36</sup> and can help avoid delays associated with such a pathway in secondary care.<sup>36</sup> The majority (60%) of respondents felt they could only sometimes liaise with primary care practitioners. Effective communication with colleagues is an important factor in the management of head and neck oncology patients; this may explain why 24% of treatment carried out by respondents was 'general dentistry'. Comments included, 'GDPs are reluctant to take on such patients', 'GDPs not confident in the timing of treatment', and 'the arrangements with primary care need to be formalised rather than depending on consultant contract'. However, a recent study of GDPs in north west England stated two thirds have treated a head and neck oncology patient within 5 years of radiotherapy, although they perceived a major barrier to provision of care was the present General Dental Service (GDS) contract.<sup>37</sup> This finding is consistent with the majority of respondents in the current survey. Measures to improve this relationship need to be addressed.

In 2009 Alani *et al.* reported that 33% of oncology patients were always dentally rehabilitated while 3% were not.<sup>32</sup> Currently this has improved to 55% of oncology patients being rehabilitated. Restorative-led treatment planning for optimal implant positioning can avoid potential restoration compromise later.<sup>38-40</sup> Previously 16% of restorative consultants were placing dental implants;<sup>32</sup> this figure has increased to 39%, while maxillofacial consultant placement has decreased from 70%<sup>32</sup> to 38%; furthermore 31% of respondents are placing zygomatic implants compared to 29% in 2009.<sup>32</sup> This increase may be a result of greater attendance at MDT meetings, training, or new resources available in dental hospitals, as 86% of respondents had access

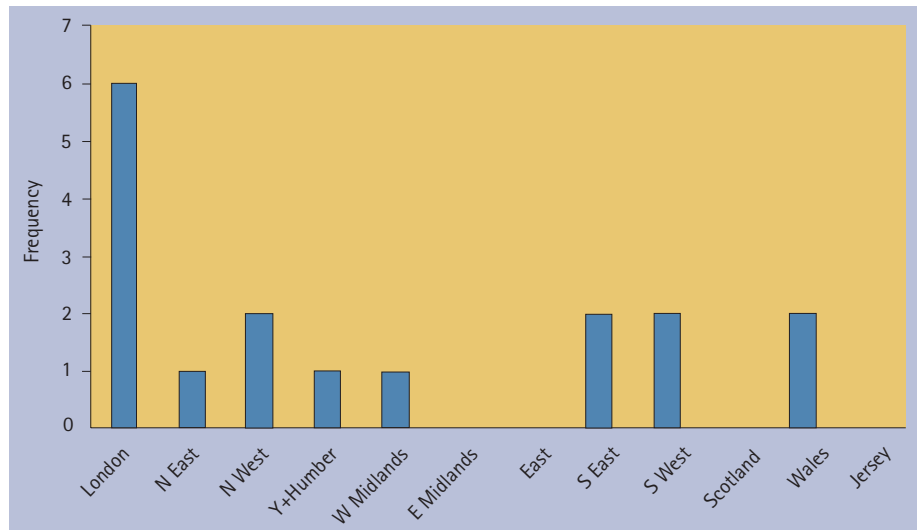


Fig. 13 Distribution of restorative dentistry consultants placing zygomatic implants

to advanced imaging. Implant manufacturer trends seem to be similar, the most frequent system being Nobel Biocare®.

Implant placement at the time of ablative surgery is an increasing trend, in 2009 this occurred sometimes in 33%<sup>32</sup> of cases. Current data shows this is now 41%. The advantages to this technique have been previously discussed but drawbacks include the implant being unrestorable due to inappropriate alignment, tumour-related death before restoration, or refusal for abutment connection as some patients are uncomfortable with further surgery.<sup>26,27,41</sup> These factors may impact on implant funding,<sup>41</sup> some patients are only rehabilitated post-two-year survival, while the Dutch fund rehabilitation irrespective of expected survival.<sup>26</sup> This study suggests implant funding is variable as 32% of operators require to routinely seek funding, 46% never and 23% sometimes, the reasons for this require further investigation. Favourably, no respondent commented patients never had access to dental implants, in fact 70% of head and neck oncology patients routinely had access. Quantifying patient eligibility is a contentious issue and is complicated by individual circumstance,<sup>42</sup> necessitating MDT planning with reference to Royal College of Surgeons guidelines.<sup>43,44</sup>

## CONCLUSION

Logistical problems in the patients' pathway have been highlighted including timely restorative screening before radiotherapy and access to treatment provision in primary care. Further resources need to be identified to optimise a nationally agreed integrated patient pathway.

Attendance during MDT meetings by consultants in restorative dentistry is increasing within the UK, as is implant-based

dental rehabilitation of oncology patients. This study highlights the changes in trend regarding implant selection, technique, timing and operating clinician.

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