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Impact of Referral Protocols on the Dental Management of Patients Undergoing Treatment for Head and Neck Oncology in Northern Ireland

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Authors

Dr Ciaran Moore *
(BDS, MFDS)

Dr Simon Killough #
(BDS, MFDS, PhD, FDS (Rest Dent) RCSI)

Dr Neill Markey #
(BDS, MFDS)

Dr Conor McLister #
(BDS, MFDS)

Dr Gerald McKenna *
(BDS, MFDS, PhD, PgDipTLHE, FDS (Rest Dent) RCSEd, FHEA)

Address for Correspondence

Dr Gerald McKenna *

Email: g.mckenna@qub.ac.uk

* *Centre for Public Health, Queens University Belfast, Northern Ireland*

\# *Centre for Dentistry, Royal Victoria Hospital, Belfast Health and Social Care Trust, Northern Ireland*

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ABSTRACT

Management of head and neck oncology necessitates an extensive multidisciplinary approach. Throughout Northern Ireland all oral care for Head and Neck Oncology patients is overseen within the Centre for Dentistry, Queens University Belfast via referral from the Head and Neck Multidisciplinary Team. The aim of this study was to develop and introduce a referral pro-forma to improve communication between members of the multidisciplinary team and ultimately expedite provision of oral care prior to patients undergoing treatment for Head and Neck Oncology. The study period ran from June 2013 until November 2014. All patients undergoing treatment for Head and Neck Oncology in Northern Ireland were included in the study. A referral pro-forma was introduced in June 2014 in an attempt to streamline the referral process. Data was gathered on patient waiting times, extraction protocols with comparisons made between the period before and after introduction of the pro-forma. In total 137 patients were included in the study: 96 patients were referred to the service using referral letters, confidential emails and via telephone; 41 patients were referred using the pro-forma The introduction of the referral pro-forma resulted in a significant decrease in the mean number of days from referral to assessment (12 to 7 days) ($p<0.05$) and significantly increased mean interval time between extractions and patients beginning radiotherapy (13 to 17 days) ($p<0.05$). Significant improvements have been made with the introduction of the referral pro-forma where patients are waiting significantly less time for dental assessment and having extractions completed in a more timely manner therefore expediting the commencement of their oncology treatment.

BACKGROUND

Head and neck cancer defines a group of malignancies principally affecting the oral cavity, nasal cavity, sinuses, salivary glands, pharynx, and larynx.[1] Pathologically these malignancies are a diverse group but the vast majority are squamous cell carcinomas (SCC) which account for over 90% of all tumours.[2] Treatment is primarily based around surgical excision of the tumour with adjunctive radiotherapy and chemotherapy. The oral side effects of radiotherapy and chemotherapy are well documented and include mucositis, xerostomia, and susceptibility to infection. Radiation caries, trismus, and osteoradionecrosis represent potential longer term issues.[3]

The most widely accepted UK definition of osteoradionecrosis (ORN) is 'irradiated bone devitalised and exposed through overlying skin or mucosa, without healing for three months and without recurrence of tumour'.[4] It is the most serious complication, excluding tumour recurrence, of radiotherapy.[5] Its pathophysiology relates to spontaneous or trauma-induced breakdown of hypoxic, hypovascular and hypocellular irradiated hard and soft tissue, subsequent inability to heal, leaving a chronic wound susceptible to commensal infection. Clinical recommendations from The Royal College of Surgeons, England indicate the need for oral care before, during and after oncology treatment.[6] This includes the need for an oral assessment and care to render each patient dentally fit before receiving surgery and embarking on a course of radiotherapy. The Royal College of Surgeons of England request that teeth of dubious prognosis be extracted at least 3 weeks before radiotherapy, with an absolute minimum interval period of 10 days.[6]

The aim of this study was to introduce a standardised dental referral pro-forma for patients undergoing treatment for Head and Neck Oncology. This pro-forma was designed to improve levels of communication between members of the Head and Neck Oncology Multidisciplinary Team and ultimately to improve care pathways for patients.

METHODS

A retrospective analysis was undertaken of all Head and Neck Oncology patients referred to the Restorative Dentistry Department, Royal Victoria Hospital, Belfast between 1st June 2013 and 31st May 2014. Data was extracted on each patient via referral letter, written clinical notes, and Electronic Care Record. The data collected included:

- Head and Neck Diagnosis: initial referral source, site of tumour, date of diagnosis, date of first multidisciplinary Head and Neck team meeting.
- Head and Neck Treatment: combination of surgery/radiotherapy/chemotherapy, total radiation dose.
- Patient referral, date of referral, detail of referral.
- Dental Assessment: date of assessment, patient attendance, dental diagnoses, dental treatment required.
- Dental follow up: time period for completion, subsequent follow up arrangements.

On 1st June 2014, a standardised referral pro-forma was introduced by the Centre for Dentistry, Queens University Belfast. The pro-forma is shown in Figure 1. The document was designed to be used to refer all patients from the Northern Ireland Head and Neck Multidisciplinary Team to the Centre for Dentistry for pre-radiotherapy screening and for supervision of oral care to render patients dentally fit prior to oncology treatment. Using the same protocol described above information was collected on all patients referred using the standardised referral pro-forma during the period 1st June 2014 – 30th November 2014 with comparisons made between the two patient groups.

RESULTS

During the initial study period a total of 96 patients were referred to the Centre for Dentistry (n=96) with a further 41 patients (n=41) after the introduction of the pro-forma.

Table 1 illustrates the percentage of patients planned to undergo radiotherapy (XRT), chemotherapy, and/or surgery as part of their oncology treatment plan. Figure 2 demonstrates the variation in radiotherapy doses for the patient cohort as planned by the Multidisciplinary Team.

Table 2 illustrates the impact of the referral pro-forma on the quality of information provided during the referral to the Centre for Dentistry. Whilst 90% of pro-forma referrals gave complete details of the Oncology treatment plan, only 55% of non pro-forma referrals indicated the surgery to be completed, 11% detailed the proposed chemotherapy and 8% provided information on radiotherapy.

Patients referred via the pro-forma were dentally assessed after a mean wait of 7 days after the Multidisciplinary Team meeting *(Figure 3)*. The data gathered followed a normal distribution and therefore was analysed using parametric testing. Statistical analysis illustrated that this was a significant improvement compared with a mean wait of 12 days for non pro-forma referrals ($p<0.05$, non paired T-Test). For extractions, statistical analysis illustrated a similar picture where those patients who were referred via the pro-forma had teeth removed at 17 days prior to radiotherapy as compared to 13 days for non pro-forma referrals ($p<0.05$, non paired T-Test) *(Figure 4)*.

Table 1. Table showing the percentage of patients receiving radiotherapy, chemotherapy, and/or surgery as part of their oncology treatment plan.

Treatment modality	Yes (%)	No (%)	Unknown (%)
Radiotherapy	95	2	3
Chemotherapy	21	30	49
Surgery	58	13	29

Table 2. Clinical information provided on referral depending on means of communication

	Surgery	Chemotherapy	Radiotherapy
Pro-forma	90%	90%	100%
Non pro-forma	55%	11%	8%

Request for Dental Assessment Date:_____

Royal Victoria Hospital Head and Neck Cancer Dental Assessment Clinic

Patient Details

Name_____ Home Telephone_____
Address_____
_____ Mobile_____
_____ Other Contact person and number
DOB_____ _____

URGENCY: Within 1 week ☐ 1-2 weeks ☐ 2-3 weeks ☐ Within 1 month ☐

REFERRAL REASON: Dental Assessment ☐ Surgical healing plate/Obturator ☐

DIAGNOSIS OF HEAD AND NECK CANCER and SITE: _____
_____
_____

PLAN Surgery ☐ Radiotherapy ☐ Chemotherapy ☐ Other ☐_____

PAST MEDICAL HISTORY: _____
_____
_____

SURGERY: Surgeon _____ Site _____
Site and Procedure _____

CHEMOTHERAPY: Start date _____ Finish date _____
Estimated sessions _____ Clinical Oncologist _____

HSC Belfast Health and Social Care Trust

Figure 1: Referral Pro-form

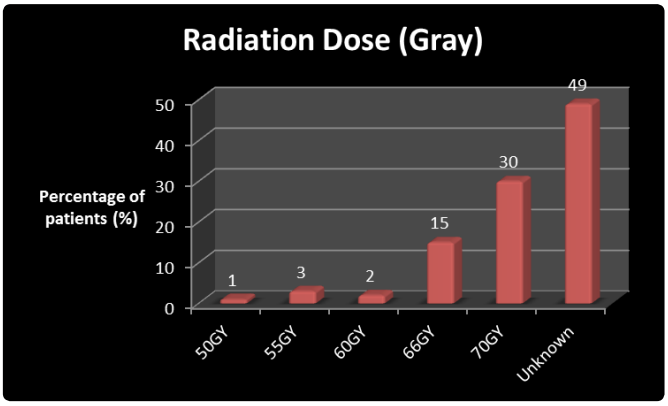

Figure 2: Planned radiation doses for all referred patients

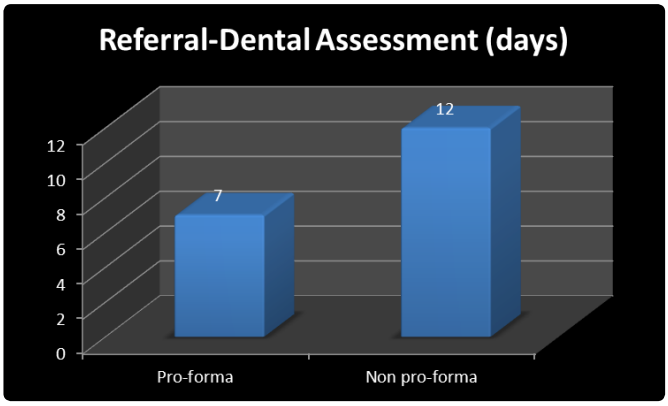

Figure 3: Dental Assessment waiting times for patients referred via Pro-forma and non Pro-forma

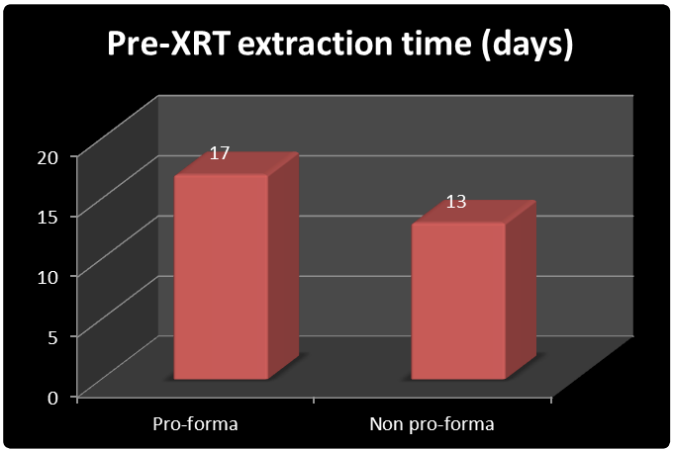

Figure 4: Pre-radiotherapy extraction times for patients referred via Pro-forma and non Pro-forma

DISCUSSION

In 2009, The British Association of Head and Neck Oncologists published guidelines in relation to multidisciplinary care of head and neck cancer patients. They state that 100% of patients should be assessed by a consultant restorative specialist both before and after their cancer treatment. The assessment should take place within 7 days of diagnosis at the outpatient clinic. It should be undertaken with the same urgency as panendoscopy or exploratory surgery, and with preferential urgency to the first multi-disciplinary team meeting (14 days).[7] With radiotherapy recommended to commence within 31 days of the decision to treat, the need for prompt assessment and treatment instigation is essential.

In this study all patient referrals to the Centre for Dentistry were generated from the Northern Ireland Head and Neck Oncology Multidisciplinary Team meeting. Prior to the introduction of the referral pro-forma patients were referred via letters, emails and telephone. Whilst these means of communication can be necessary in urgent situations they can often be inefficient. Via these referral methods patients were seen on average 12 days after the Multidisciplinary Team meeting. This is short of the standards described by the British Association of Head and Neck Oncologists.[7] Following introduction of the referral pro-forma, the mean dental assessment time was significantly reduced to 7 days ($p<0.05$). This reduction coupled with the more detailed information provided by the referral pro-forma can help to expedite commencement of dental treatment.

Dental management of patients awaiting treatment for Head and Neck Oncology can be challenging. Timeframes for commencing treatment are pressurised in order avoid any delays. Current recommendations from the Royal College of Surgeons, England suggest that teeth of dubious prognosis be extracted at least three weeks prior to beginning a course of radiotherapy, with an absolute minimum interval of 10 days. As a result the Centre for Dentistry is also tasked with providing care to render Head and Neck Oncology patients dentally fit prior to undergoing treatment. Studies on the dental health status of newly diagnosed head and neck cancer patients suggest that they present with significant oral disease and this cohort followed similar patterns. In this study, 50% of patients required extraction of at least one tooth prior to oncology treatment. Introduction of the referral pro-forma had a statistically significant impact on the timelines for extractions by increasing the healing period prior to commencement of radiotherapy. Those patients who were referred via the pro-forma had teeth removed at a mean of 17 days prior to radiotherapy as compared to 13 days for non pro-forma referrals ($p<0.05$).

Pro-forma referrals were also vastly superior in informing of the patient's proposed oncology treatment plan. All of the pro-forma referrals definitively indicated whether or not patients were to undergo radiotherapy, as opposed to only 8% of non pro-forma referrals. Thirty-five percent more pro-forma referrals also documented whether surgery was to take place, as well as the appropriate site(s) and timeframe. Providing such information greatly enhanced oral care clinical decision-making. Knowledge of surgery to be undertaken within the oral or nasal cavities can help to indicate the need for an obturator and, accordingly, its design. Furthermore, the restorability and prognosis of individual teeth may be deemed more favourable with the absence of osteoradionecrosis risk in those patients not awaiting radiotherapy.

CONCLUSION

The introduction of a standardised referral pro-forma has significantly improved the quality of referrals between the Northern Ireland Head and Neck Oncology Multidisciplinary Team and dental services within the Centre for Dentistry in Queens University Belfast. Most importantly the introduction of the pro-forma has significantly shortened waiting times for patients requiring an oral assessment and provided a longer healing window between extractions and commencement of radiotherapy in line with published clinical guidelines.

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