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Hyperbaric Oxygen for the Prevention of OsteoradioNecrosis

Submission date	Recruitment status	[_] Prospectively registered
21/05/2008	No longer recruiting	[_] Protocol
Registration date	**Overall study status**	[_] Statistical analysis plan
13/06/2008	Completed	[_] Results
Last Edited	**Condition category**	[_] Individual participant data
04/06/2026	Injury, Occupational Diseases, Poisoning	[X] Record updated in last year

Plain English summary of protocol
http://www.cancerhelp.org.uk/trials/a-study-looking-at-a-treatment-to-prevent-jaw-bone-damage-in-head-and-neck-cancer

Contact information

Type(s)
Scientific

Contact name
Mr Richard Shaw

Contact details
Regional Maxillofacial Unit
University Hospital Aintree
Lower Lane
Liverpool
United Kingdom
L9 7AL
+44 (0)151 529 5290
richardshaw@liv.ac.uk

Additional identifiers

Protocol serial number
2

Study information

Scientific Title

A randomised controlled trial of hyperbaric oxygen to prevent osteoradionecrosis of the irradiated mandible

Acronym
HOPON

Study objectives
The aim of this study is to determine the benefit of hyperbaric oxygen (HBO) in the prevention of osteoradionecrosis (ORN) subsequent to a surgical procedure in the "at risk" irradiated mandible. This study is designed as a randomised control multi-centre feasibility study.

Ethics approval required
Old ethics approval format

Ethics approval(s)
Central Manchester Research Ethics Committee on 28/04/2008 (ref: 08/H1008/32)

Primary study design
Interventional

Study design
Multicentre randomised controlled trial

Study type(s)
Prevention

Health condition(s) or problem(s) studied
Osteoradionecrosis subsequent to a surgical procedure in an irradiated mandible

Interventions
Arm 1: Standard management:
1. Pre- and post-operative chlorohexidine1 mouthwash 0.2% - use 10 ml (i.e. one capful) washed around the mouth for around 1 minute and spat out, three times daily for 5 days post-operatively.
1.1. In case of chlorohexidine allergy use warm salt mouthwash at 1 teaspoon per cup of warm water.
2. Oral antibiotics: amoxicillin 3 g oral 1 hour pre-operatively (or 1 g intravenously), and 250 mg three times a day (tds) x 5 days post-operatively
2.1. In penicillin allergy: Orally either 600 mg tablet, or same dose of 75 mg/5 ml suspension if tablets not tolerated, 1 hour pre-operatively or intravenously 600 mg at time of surgery, and 200 mg metronidazole (patients should be warned of interaction between alcohol and metronidazole) tds x 5 days post-operatively

Arm 2: Standard management plus HBO
Patients will undergo 20 HBO treatments prior to surgery followed by a further 10 HBO treatments. HBO will comply with dive table RN66. For each HBO treatment, patients are compressed to 2.4 ata while sitting in an appropriate British Hyperbaric Association recognised hyperbaric chamber. Patients breathe 100% oxygen at pressure via a transparent hood. The total time at 2.4 ata is 90 minutes. During the final 10 minutes of oxygen breathing, the chamber is depressurised to ambient atmospheric pressure at a linear rate (14.3 kpa/min).

3. All participants will be operated with a minimally traumatic surgical technique after the standard management with or without HBO.

Intervention Type
Other

Primary outcome(s)
Mucosal healing and/or the presence of necrotic bone at 6 months following surgery, measured by the following:
1. Clinical assessment in centre
2. Clinical photograph with in-photograph ruler
3. Radiographic using orthopantomogram (OPT)

The primary outcome will be based on a blinded assessment of anonymised clinical photograph and radiograph by a central committee consisting of experienced clinicians in the field.

Key secondary outcome(s)
1. Mucosal healing at 3 months following surgery (measured as at 6 months following surgery)
2. Severity of cases of diagnosed osteoradionecrosis, with clinical and radiographic recordings of severity made according to the following:
2.1. Grade I: ORN confined to alveolar bone
2.2. Grade II: ORN limited to the alveolar bone and/or mandible above the level of inferior alveolar canal
2.3. Grade III: ORN involving the mandible below the level of inferior alveolar canal and ORN with a skin fistula and/or pathologic fracture
3. Pain: patient questionnaire at 3 and 6 months
4. Quality of life (QoL): prior to randomisation but following consent, and at 3 and 6 months (as determined by a modified University of Washington)
5. Head and Neck QoL questionnaire (modified) at baseline, 3 and 6 months
6. Adverse events in HBO arm related to hyperbaric oxygen treatment, monitored throughout trial
7. Admissions, operations, complications (e.g. major bleeding, sepsis), monitored throughout trial
8. Mortality. Patients will be followed up until death or 6 months.
9. Implant retention (where appropriate) and outcomes of ORN (where appropriate) at 12 and 24 months following surgery

Completion date
31/05/2014

Eligibility

Key inclusion criteria
1. Both males and females, age >18 years
2. Prior history of external beam radiotherapy (dose >50 Gy) to mandible or prior history of brachytherapy with equivalent radiation dose as above
3. No evidence of cancer recurrence
4. Condition requiring surgery to mandible (commonest examples but not limited to: dental extraction, implant placement, surgical tooth, cyst or osteosynthesis plate removal)
5. Patient has read and understood information leaflet and is willing to be randomised
6. Patient competent to consent and psychologically/ physically fit for HBO

Participant type(s)
Patient

Healthy volunteers allowed
No

Age group
Mixed

Lower age limit
18 Years

Upper age limit
120 Years

Sex
All

Total final enrolment
0

Key exclusion criteria
1. Known contraindications to HBO:
1.1. Lung disease: Severe chronic obstructive airways disease; bullous lung disease, acute or chronic pulmonary infection; uncontrolled asthma, untreated pneumothorax
12. Middle ear disease (such as previous middle ear operations, eustachian tube dysfunction or recurrent attacks of vertigo) that proves refractory to simple interventions such as grommet insertion
2. Prior hyperbaric oxygen therapy
3. Prior diagnosis of osteoradionecrosis of the mandible
4. Previous surgery for osteoradionecrosis
5. Any history of systemic bisphosphonate therapy, pentoxyphylline or tocopherol
6. Pregnancy

Date of first enrolment
01/06/2008

Date of final enrolment
31/05/2014

Locations

Countries of recruitment
United Kingdom

England

Study participating centre

Regional Maxillofacial Unit
-
Liverpool
England
L9 7AL

Sponsor information

Organisation
University of Liverpool (UK)

ROR
https://ror.org/04xs57h96

Funder(s)

Funder type
Charity

Funder Name
Cancer Research UK (ref: C23033/A9397)

Alternative Name(s)
CR_UK, Cancer Research UK - London, Cancer Research UK (CRUK), CRUK

Funding Body Type
Private sector organisation

Funding Body Subtype
Other non-profit organizations

Location
United Kingdom

Results and Publications

Individual participant data (IPD) sharing plan

IPD sharing plan summary
Not expected to be made available

Study outputs

Output type	Details	Date created	Date added	Peer reviewed?	Patient-facing?
Participant information sheet	Participant information sheet	11/11/2025	11/11/2025	No	Yes
Plain English results			04/06/2026	No	Yes
Study website	Study website	11/11/2025	11/11/2025	No	Yes