

**REPORT OF A WORKING PARTY CONVENED BY THE FACULTY OF DENTAL SURGERY**

**CURRENT CLINICAL PRACTICE AND PARAMETERS OF  
CARE**

**THE MANAGEMENT OF PATIENTS WITH  
THIRD MOLAR (syn: WISDOM) TEETH**

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# 1. Background to origin and evolution of document

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- 1.1 An initial draft document relating to dentoalveolar surgery and in particular impacted/ectopic teeth was drawn up by small expert working panel convened by the Audit Subcommittee of the British Association of Oral and Maxillofacial Surgeons (BAOMS) and Joint Specialist Working Party advising the Faculty of Dental Surgery Clinical Audit Committee of the Royal College of Surgeons of England (FDS of RCS[Eng]). During the preparation of this there was close liaison with the American Association of Oral and Maxillofacial Surgeons (AAOMS) who in 1991 published draft Parameters of Care across the range of the specialty.<sup>1</sup>
- 1.2 Following extensive revision after peer review at three levels approval was given by the Board of FDS of RCS(Eng) and Council of BAOMS for a pilot guideline document<sup>2</sup> to be circulated in computer software format for field testing by the specialist consultant body in the United Kingdom early in 1995. Amendments recommended during the consultation period were then incorporated.
- 1.3 The FDS of RCS(Eng) was subsequently commissioned by the Department of Health (DH) to produce a definitive national guideline. An augmented working party was convened which in turn commissioned the NHS Centre for Reviews and Dissemination (CRD) at the University of York to carry out a detailed literature search. This was completed, in part, during October 1996.<sup>3</sup>
- 1.4 More recently there has been further liaison with AAOMS who in turn during September 1995 published an extensively revised document entitled 'Parameters of Care for Oral and Maxillofacial Surgery: A Guide for Practice, Monitoring and Evaluation'.<sup>4</sup> AAOMS has also commissioned a research programme which includes a prospective randomised control clinical trial to investigate the removal vs retention/observation of third molars.
- 1.5 The Faculty has been grateful for advice provided by the Health Care Evaluation Unit of the Department of Public Health Sciences at St George's Hospital, Tooting, London who have developed appraisal criteria and instruments for clinical guideline documentation.<sup>5,6</sup> Every effort has been made to align the document with the objectives of these and other<sup>7</sup> appraisal criteria and also to comply with the recommendations of the Clinical Outcomes Group (COG) advising the Health Care Directorate of the NHS Executive expressed in a booklet in the Good Practice series entitled 'Clinical Guidelines: using clinical guidelines to improve patient care within the NHS',<sup>8</sup>

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## **2. Introduction**

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This document has the endorsement of the Faculty of Dental Surgery of the Royal College of Surgeons of England following initial field testing during which all consultant oral and maxillofacial surgeons in the United Kingdom were invited to comment. Amendments following this phase have been incorporated together with updated relevant references following a preliminary literature search limited to “prophylactic” removal of wisdom teeth by the NHS Centre for Reviews and Dissemination.<sup>3 9</sup>

It has been designed to present a consensus view whilst taking account of the range of current best practice and parameters of care for the guidance of clinicians, as a reference for Trusts and purchasers and also an educational and training resource.

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## 3. Definitions

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### 3.1 Impacted Teeth

**Impaction** occurs where there is prevention of complete eruption into a normal functional position of one tooth by another, due to lack of space (in the dental arch) obstruction by another tooth or development in an abnormal position.<sup>56 57 10</sup>

An impacted tooth may be:

3.1.1 **Completely impacted:** when entirely covered by soft tissue and partially or completely covered by bone within the bony alveolus

3.1.2 **Partially erupted:** when it has failed to erupt into a normal functional position

*Impaction is defined clinically and radiographically. It has temporal and positional properties. It is possible for a tooth to be at or beyond the occlusal plane and still be impacted. As the word eruption is used in two senses (a process and an event) clinical emergence is preferred to describe the event of clinical appearance in the oral cavity. Eruption as a physiological process is normally associated with root development and is complete well before apex closure. The terms unerupted and partially erupted are commonly applied to normally developing as well as impacted teeth, the two states being separated by the event of clinical emergence. It is important that impaction is clearly distinguished from normal development.*

3.1.3 **Ankylosed:** fused with the alveolar bone. This is rare in connection with wisdom teeth and tends to occur after middle age

### 3.2 Ectopic/Displaced Teeth

A tooth is **ectopic** if malpositioned due to congenital factors or **displaced** by the presence of pathology

This document will consider in particular **third molars (syn. wisdom teeth)**.

Third molar emergence normally occurs between 18-24 years but eruption is not uncommon outside these limits.<sup>7 16 18 58 59</sup> However one or more third molars fail to develop in approximately 1:4 adults. In a workshop on the management of patients with third molar teeth<sup>15</sup> senior experienced clinicians initially examined the literature exploring the natural course of third molar development. With specific reference to the natural course it was concluded that progressive uprighting of third molars commonly occurs up to age 25, those in a vertical position commonly proceeding to full eruption while those remaining unerupted may change position favourably or unfavourably until the middle of the third decade or longer.<sup>16 17 18 19</sup>

Epidemiological studies often fail to distinguish between the prevalence of one impacted third molar and two or more. Despite this third molar impaction is clearly a common condition. The prevalence of impaction of at least one impacted lower third molar has been reported as 72.7% in an age 20-30 years cohort. Prevalence of upper third molar impaction was 45.8% of this series from Sweden.<sup>11</sup> The final results of a longitudinal study of third molars<sup>17</sup> have not yet been published but a study by Hugoson and Kugelberg<sup>11</sup> shows a sharp decline in the numbers of third molars between age 20-30 principally due to operative removal. Other studies confirm these findings; for example Morris and Jerman<sup>60</sup> found that 65.6% of 5600 males between 17-24 had one or more impacted third molars. However non-age stratified studies have found prevalences of 16%<sup>61</sup> and 11.7%<sup>17</sup> while in a non-random study of 264 patients age 35+ in Wales<sup>62</sup> 44% had at least one lower third molar of which 29% were impacted. The latter is similar to the findings of Hugoson and Kugelberg<sup>11</sup>.

Impaction is an abnormality of development which predisposes to pathological changes such as pericoronitis, caries, resorption and periodontal problems. Cysts and tumours may also arise and can proceed to an advanced stage before the presentation of symptoms. Although not pathological in itself<sup>12 13</sup> a consensus development conference of the National Institute of Health in the USA (November 1979)<sup>14</sup> considered that impaction or malposition of a third molar is an abnormal state which may justify its removal; such treatment not being considered 'prophylactic'. It is nevertheless important to draw a distinction between an abnormal state and pathology. Under these circumstances the decision to recommend removal must be based on a balance between the risk of observing a tooth until it becomes associated with pathology against that of removal before overt disease develops<sup>2 4</sup> Relative risks have been estimated in two decision analyses both of which have suggested that surgical intervention in the absence of pathology is generally not justified.

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## 4. Indications for removal <sup>2 4</sup>

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There has been disagreement about the appropriateness of removal of third molars unassociated with local pathology but there is no controversy about the value of the removal of impacted third molars when they are associated with pathological changes.<sup>14</sup> One or more may be applicable in each case.<sup>4 14</sup>

- 4.1 Overt or previous history of infection including pericoronitis <sup>14 16 20 21 22 99</sup>  
*This indication will generally exclude transient/self-limiting 'inflammation' that may be associated with normal eruption of any tooth*  
Prevalence: *In 7 studies of prevalence of pathology related to third molars, reporting of pericoronitis was not undertaken with clarity or consistency although it is the most common stated reason for removal. Von Wowern <sup>16</sup> found 10% of a sample of 130 students followed over 4 years developed pericoronitis. In a similar student group age 18-21 years Richardson <sup>95</sup> noted that in 76 subjects with 112 teeth, 17 lower third molars in 9 subjects were removed for recurrent episodes of pericoronitis (i.e.: 11% or 3-4% pa). A prospective study by Bruce et al confirmed pericoronitis to be the most frequent reason (in 40% of patients) for third molar removal in different age groups <sup>63</sup> while the proportions in other studies have varied between 8-59%.<sup>64 65 96</sup>*
- 4.2 Unrestorable caries <sup>14 20 23 24 66 67</sup>  
Prevalence: *van der Linden et al 1995 in a review of 1001 patients whose third molars were removed aged 13-75 years reported caries in 7.1% of impacted third molars and in 42.7% of adjacent molars (204 and 1227 of 2872 teeth respectively).<sup>80</sup>*
- 4.3 Non-treatable pulpal and/or periapical pathology <sup>2 4 14</sup>
- 4.4 Cellulitis, abscess and osteomyelitis <sup>2 4 14</sup>  
Prevalence: *of infective disease (including pericoronitis) between 4.7%<sup>69</sup> and 5%<sup>68</sup>*
- 4.5 Periodontal disease<sup>14</sup>  
*Impacted third molars associated with periodontally involved adjacent (usually second molar) teeth should be removed early as the disease may be irreversible by 30 years.<sup>25</sup> This is particularly important in smokers where periodontal disease may progress rapidly.*  
Prevalence: *between 1% - 4.5%<sup>20</sup>*
- 4.6 Orthodontic abnormalities.  
*In some patients there may be an indication for removal of unerupted upper third molars before the commencement of maxillary retraction which would result in their impaction. However there is little rationale based on present evidence for excision of lower third molars solely to minimise present or future crowding of lower anterior teeth<sup>20 24 26 27 28 29 30 31</sup>*
- 4.7 Prophylactic removal in the presence of specific medical and surgical conditions.  
*These include endocardial/valvular scarring/abnormality predisposing to bacterial endocarditis, organ transplants, alloplastic implants, chemotherapy/radiotherapy<sup>15 32</sup>*
- 4.8 Facilitation of restorative treatment including provision of prosthesis.  
*Erupted third molars which can be maintained in a state of health may be retained as potential abutment teeth or for the maintenance of vertical dimension.<sup>14</sup>*
- 4.9 Internal/external resorption of tooth or adjacent teeth <sup>14 20 24 26 33 34 35 36</sup>  
Prevalence: *in the range 2% - 5%<sup>64 68 69 70</sup>*
- 4.10 Pain directly related to a third molar <sup>15</sup>  
*It is important to avoid an erroneous diagnosis of third molar related pain which may in reality be associated with the temporomandibular joint and masticatory musculature.*  
Prevalence: *great variation has been reported between 5 - 53%<sup>16</sup> and 18.4%<sup>69</sup>*

- 4.11 Tooth in line of bony fracture or impeding trauma management<sup>37 38</sup>  
*On occasions it is recommended that a third molar be left in situ at the time of initial fracture treatment. However in most cases removal is required at a later time.*
- 4.12 Fracture of tooth<sup>2 4 14</sup>
- 4.13 Disease of follicle including cyst/tumour<sup>14 20 24 29 30 31 39 40</sup>  
*Prevalence: 2-11% for cyst and between 0.0003-2% for odontogenic tumour<sup>71 75 76 92</sup>*
- 4.14 Tooth/teeth impeding orthognathic surgery or reconstructive jaw surgery<sup>2 4</sup>
- 4.15 Tooth involved in/ within field of tumour resection<sup>15 41</sup>
- 4.16 Satisfactory tooth for use as donor for transplantation<sup>15</sup>

## **Appendix**

A4.1 *An impacted tooth which is totally covered by bone and which does not meet the above indications for surgery should not be removed; however it is generally recognised that it should be monitored periodically by clinical and radiographic examination (usually dental panoramic tomograph) because of the potential for change in position and/or development of pathology<sup>4</sup>. The relative risk of retaining/delaying removal of impacted third molars should be considered in all cases. However surgical intervention in the absence of pathology is not usually indicated.*

A4.2 *Consideration may be given to removal of an unerupted third molar by the third decade when a high probability of disease or pathology exists and when the risks associated with early removal are less than the anticipated risks of later removal (ie: increased morbidity<sup>4</sup>). It is however emphasised that currently there is little evidence (based on randomised controlled trials) which differentiates those likely to become associated with disease from those unlikely to do so.*

*Two situations in which a high probability of consequential local disease is present are:*

- a. *When a vertical or distoangular impacted tooth is at or close to the occlusal plane but the occlusal surface has been half or more covered for an extended period by soft tissue, pericoronitis is more likely<sup>93 94</sup>*
- b. *When a partly-erupted impacted wisdom tooth in mesio-angular or horizontal impaction has a contact point at or close to the amelocemental junction of the second molar the risk of caries of the latter is increased<sup>2 80</sup> especially in the absence of a high standard of oral hygiene.*

A4.3 *In a patient who has borderline indications for third molar excision and whose occupation will necessitate long periods away from civilisation (eg astronauts, nuclear submariners and explorers) consideration may be given to earlier rather than later third molar removal. Results are awaited of a prospective study undertaken by the UK Tri-Services, USA and Canadian Services Dental Corps and of a Swedish study of school children followed to age 26.<sup>11 79</sup>*

A4.4 *Opposing and contralateral teeth:*

*If there are indications for removal of one third molar it is in the patient's best interests to determine whether the other three are present and if so whether their excision is required on the grounds of the clinical indications listed under items 4.1- 4.16 above.<sup>2</sup>*

*It is suggested that removal of other teeth should only be carried out when treatment under general anaesthetic is planned or selected by the patient and where there is no evidence of increased risk of post-operative complications such as sensory nerve impairment. It is important to recognise that medico-legal cases have arisen in relation to complications arising from removal of such opposing and/or contralateral teeth.*

## *Commentary*

Although in a recent assessment of published reviews<sup>3 77</sup> two papers concluded that it may be appropriate to remove impacted third molars prophylactically<sup>23 24</sup> the methodological quality of these was deemed to be less satisfactory than others which found there to be lack of evidence to support this line of management.<sup>13 20 21 26 27 28 29 30 31 47</sup> In particular Mercier and Precious<sup>20</sup> clearly lay out the risks and benefits of surgery and conclude that the best general approach in growing individuals is to remove on the basis of clinical judgement some teeth early when the chances of eruption are minimal. With others periodic examination is more appropriate when the patient has been fully informed of the relevant risks and benefits. However in the absence of good evidence to support prophylactic removal it seems reasonable at this time to avoid removal of 'pathology-free' impacted third molars.

Various approaches to determining with greater precision the relative merits of prophylactic removal against non-operative management have been proposed. Most however are associated with difficulties in comparison of outcomes of the two strategies. The outcome of surgical removal may be measured by the rate of various complications. However the consequences of deliberate retention unless or until pathology occurred include the disease processes which can occur and also the complication rate resulting from delayed removal. To be directly comparable the outcomes of the two strategies would require summarisation by a common method. To this end the use of decision-analyses which have estimated 'days of standard discomfort' (DSD)<sup>50</sup> or a utility value condensed from parameters influencing a 'sense of well-being'<sup>51</sup> has been suggested. An evaluation of three third molar management strategies utilising decision analysis has been reported by Tulloch et al<sup>52</sup>.

It has been stated that a reliable conclusion can only be achieved from a well designed and conducted randomised controlled trial (RCT) incorporating clinical and population-based observational studies.<sup>53 54</sup> It is essential that the sample size is large enough to detect clinically important but moderate and varying differences and that the follow-up period is long enough to detect all important consequences of different management strategies. Physical, sociological and psychological outcome parameters (contributing to 'quality of life') should be measured and compared together with patients' quantitative assessments of different outcomes.

It is recognised that an RCT would be difficult to undertake and it has been suggested that such a study would be unlikely to provide scientifically meaningful results for at least ten years. One more expedient option which is suggested has been a large scale observational study in areas with low levels of provision of oral surgery services in order to determine the levels of pathology related to retained impacted third molars in different age groups. It is noted that in the available literature little if any information is evident suggesting that third molars are a public health problem in such areas.

A prospective multi-centre RCT has been commissioned in the USA. This aims to compare within each patient clinical (measurement of periodontal pocket probing depths and crestal alveolar height), biological (gingival crevicular cytokine levels and pathogenic organism count) and Health Related Quality of Life (HRQL) outcomes of removal vs retention of third molars. In addition it is planned to compare these parameters across patient groups stratified by age, gender and race. The variables to be measured include morbidity (as complications rates) associated with third molar removal, the impact upon HRQL of removal vs monitoring/ retention, the effect of removal on second molars and overall oral health and the prevalence of clinical problems associated with retention.

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## 5. Factors affecting risk <sup>2 4</sup>

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Factors that increase the risk of complications once a decision has been made to proceed to surgery are:

- 5.1 Presence/absence of underlying systemic disease that may interfere with normal healing (*eg: diabetes mellitus, chronic renal disease, hepatic disease, haematological disorder, steroid therapy, contraceptive medication, immunosuppression, malnutrition*)  
  
*Age alone is not regarded as a significant risk factor in patients judged healthy by classification of the American Society of Anaesthesiology(ASA) <sup>4 14 35</sup> but it is generally agreed that with an increase of age local complications of removal become more common and severe.*
- 5.2 Anatomical position of tooth (*eg: ectopic position with angulation/rotation leading to compromised access*)
- 5.3 Root morphology (*eg: dilaceration, divergence, size, shape, number*)
- 5.4 Local anatomical relationships (*eg: maxillary sinus/nasal cavity/lingual and inferior alveolar nerves/adjacent teeth*)
- 5.5 Status of adjacent teeth (*eg: periodontal disease/ presence of restoration/fractured crown/function as bridge abutment*)
- 5.6 Other conditions leading to limited access to oral cavity (*eg: trismus due to any cause including infection, muscular and neuromuscular disorders, constricted oral orifice*)
- 5.7 Patient cooperation/compliance (*eg: degree of patient and/or family understanding of the clinical problem, aims of and acceptance of proposed treatment*).
- 5.8 Bulk of supporting bone in maxilla/mandible
- 5.9 Increased or significantly diminished bone density
- 5.10 Ankylosis of tooth/teeth
- 5.11 Presence/absence of acute/chronic infection
- 5.12 Presence/absence of associated disease/ pathology (*eg: cysts/ neoplasia*)
- 5.13 Presence/absence of other local bone/soft tissue disease (*eg: Paget's Disease/vascular malformations/post-radiation vascular sclerosis*)
- 5.14 Presence of associated fracture of maxilla/mandible
- 5.15 History of temporomandibular joint disease or disorder (*where limited access may increase the technical difficulties of third molar removal and precipitate exacerbation of an arthropathy/myopathy*)
- 5.16 Availability of appropriately trained clinicians speaking the same language
- 5.17 Availability of and access to appropriate facilities

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## 6. Nature of treatment

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### 6.1 Direct

Presurgical assessment includes as a minimum the taking of a history plus clinical examination and diagnostic imaging. A dental panoramic tomographic (DPT) radiograph is generally sufficient for the management of third molars. If this provides inadequate information or there is doubt alternative supplementary films may include intraoral periapical or oblique lateral views of the relevant areas plus in exceptional cases CT scanning to determine with greater precision relationship with the inferior alveolar canal.<sup>2 10</sup>

The following procedures for the management of third molars are not listed in order of preference:<sup>2 4</sup>

6.1.1 Surgical removal/excision of tooth/teeth: *procedure variable dependent upon status of tooth including degree/complexity of impaction. Generally involves raising of soft tissue flaps for adequate exposure prior to removal of bone and/or tooth division (utilising water-cooled/irrigated rotary instruments +/- chisel/osteotome) prior to delivery by hand held elevator +/- forceps*

*Partial excision to avoid damage to the IAN in high-risk cases is not recommended on account of the high complication rate<sup>97 100 101</sup>*

6.1.2 Operculectomy/surgical periodontics<sup>2 4</sup> : *in carefully selected cases with proviso that subsequent excision may be required*

6.1.3 Observation<sup>2 4 14</sup>: *in cases where impacted teeth do not meet the indications for surgery. Periodic clinical and radiographic examination should be ensured.*

6.1.4 Surgical exposure<sup>2 4</sup> : *in selected cases in liaison with experienced orthodontic opinion*

6.1.5 Surgical reimplantation/transplantation<sup>2 4</sup> : *in selected cases with co-operation of experienced orthodontic opinion*

*Orthodontics prior to surgical treatment to avoid IAN damage remains incompletely evaluated<sup>98</sup>*

In all cases adequate instructions for post-treatment care and follow-up should be provided

### 6.2 Adjunctive

6.2.1 Anaesthesia<sup>2</sup>

Surgical management may be carried out utilising:

6.2.1.1 Local analgesia (LA)

6.2.1.2 LA supplemented by intravenous sedation/analgesia/relative analgesia

6.2.1.3 General anaesthesia with airway protection achieved by endotracheal intubation or by laryngeal mask  
*This may be supplemented by local analgesia with vasoconstrictor to reduce haemorrhage and post-operative pain*

The anaesthesia/analgesia selected will be dependent upon a number of factors including those listed under paragraph 6 above. Third molar procedures are generally suitable for day care management and it is recognised that treatment under local analgesia and sedation is associated with reduced complication rates<sup>78</sup>.

## 6.2.2 Perioperative medication <sup>2</sup>

Drugs prescribed will vary according to local and/or individual policies and also for specific patients. However as a guide those in common use include:

6.2.2.1 Conventional sedative/antiemetic premedication

6.2.2.2 Topical local anaesthetic cream at site of planned intravenous injection

6.2.2.3 Non steroidal anti-inflammatory drugs (NSAIDs) for analgesia and to reduce oedema and trismus

6.2.2.4 Steroids (eg: dexamethasone) to reduce oedema and trismus

6.2.2.5 Antibiotics to reduce incidence of local osteitis /infection which may cause prolonged pain and swelling <sup>81 82</sup>...see 7.2.7 and 7.2.8 below

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## 7. Outcome assessment indices

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### 7.1 Indicators of favourable outcome<sup>2 4 15</sup>

Clinical evidence that the expected aims of treatment have been achieved mainly comprises cure of disease associated with third molar removal.<sup>4</sup> However during a typical uncomplicated recovery pain, swelling and trismus may be expected and will be most severe during the first three days (maximal at 36-48 hours) settling over 5-7 days. Any residual symptoms should resolve by three weeks at which time wound healing should not be complicated by soft tissue or bone infection/inflammation and sensory nerve function should be normal<sup>83</sup>.

### 7.2 Indicators of unfavourable outcome<sup>2 4 15</sup>

Known risks and complications associated with treatment.

7.2.1 Prolonged pain

7.2.2 Prolonged haemorrhage

*Incidence: 0.6-5%<sup>63 72</sup> with higher incidence in older age groups*

7.2.3 Prolonged swelling

7.2.4 Development of excessive haematoma

7.2.5 Unscheduled secondary surgical procedure

7.2.6 Prolonged trismus

7.2.7 Development of alveolar osteitis<sup>20 42 43 44</sup>

*Incidence: 1-35% generally between 1-5%<sup>20</sup>*

7.2.8 Acute/chronic/local/systemic infection including development of osteomyelitis

*Incidence: 25 in 100,000 risk of serious postoperative infection<sup>73</sup>*

7.2.9 Injury to adjacent teeth and/or hard or soft tissues

*Incidence: 0.3% of damage to adjacent tooth<sup>63</sup> with up to 50% incidence of permanent periodontal injury<sup>74</sup>*

7.2.10 Exposure of an inappropriate/unplanned operative site (*eg: incorrect side*)

7.2.11 Unrecognised coexisting condition requiring additional unplanned surgical procedure

7.2.12 Unexpected sensory nerve damage (*eg: anesthesia/paresthesia of lower lip and/or tongue*)<sup>20 45 46</sup>

*Incidence: Generally in range 1-1.6% long term : 10-12% interim. However distinction should be drawn between inferior alveolar (IAN) and lingual (LN) nerves and whether the dysfunction is temporary or permanent.*

*IAN: 2.7% - 36% temporary the latter in cases where radiological signs are present of intimate relationship with neurovascular bundle.<sup>84</sup>*

*LN: 0.25-23% temporary; 0.14-2% permanent<sup>85-91</sup>*

7.2.13 Osteoradionecrosis

7.2.14 Iatrogenic mandibular/maxillary fracture

*Incidence: 2-4% including alveolar and lingual plate fracture<sup>63</sup>*

- 7.2.15 Oroantral/oronasal fistula
- 7.2.16 Introduction of tooth, tooth fragments or other foreign body/ies into adjacent anatomical zones (*eg: maxillary sinus/ infratemporal fossa/inferior alveolar canal/contiguous soft tissues or aerodigestive tract*)
- 7.2.17 Incomplete removal either intentionally or unintentionally of tooth with retention of fragments  
*Incidence: of retained root fragments: 4.9% of a series of 388 patients aged 40-80years<sup>11</sup>*
- 7.2.18 Retention of non-vital bone fragments and/or follicular soft tissue and/or subsequent exposure of alveolar bone
- 7.2.19 Persistence of/development of new pathology (*eg: recurrent or residual cyst or tumour*)
- 7.2.20 Fracture/failure of instrument with retention of instrument fragment.
- 7.2.21 Systemic medical/surgical complications/death during operative/postoperative period
- 7.2.22 Failure of eruption following exposure and subsequent orthodontic treatment
- 7.2.23 Temporomandibular joint disorder/disease +/- associated muscular dysfunction
- 7.2.24 Prolonged period of disability
- 7.2.25 Complications associated with local analgesia, sedation or general anaesthetic

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## 8. Summary and conclusion

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These parameters of care are designed to provide guidance consistent with current best clinical practice in the United Kingdom. They have been prepared following extensive consultation with the profession nationally<sup>2</sup> and are also consistent with the recommendations of authoritative documentation from the USA.<sup>1 4 14 15</sup> The existing literature was extensively reviewed in the preparation of the latter and has been more recently assessed following a search of electronic data-bases by the NHS Centre for Reviews and Dissemination<sup>3</sup>. Under appraisal criteria the quality of evidence provided by the literature is graded at Levels II and III (where Level I is the highest quality based upon well designed randomised controlled trials, meta-analyses or systematic reviews). The strength of recommendation under the criteria is therefore graded B/C (where A is the highest being based on Level I evidence). Nevertheless internationally over the years recorded opinion has remained remarkably similar with only limited areas of discussion. The main areas of variation in practice relate to removal vs retention and observation of pathology free impacted third molars and also to anaesthetic/analgesic/sedation modality.

It is unlikely that a further extended systematic literature search would prove advantageous as the major problem is the absence of evidence provided by sound randomised controlled trials. It is hoped that a study which has been commissioned in the USA will be successful in providing this data. Whilst it is accepted that this does not constitute indisputable evidence the indications for care provided in section 4 of this document are felt to represent the views of the majority of experienced clinicians.

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## 9. References

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### 9.1 References specifically cited in the text

*[where numbered references/s are cited attached to a heading they relate to all sub-headings within section]*

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