

Pericoronitis: treatment and a clinical dilemma.

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Pericoronitis: treatment and a clinical dilemma

Pericoronitis is an infection associated with impacted lower third molars that can necessitate the removal of these teeth. The clinical features of this condition are described and its treatment outlined, emphasising local measures. A case of pericoronitis in a 52-year-old patient is discussed, which illustrates the risks and benefits of removal of wisdom teeth; removal can lead to nerve damage, retention can precipitate serious, even life-threatening infection.

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Pericoronitis

Pericoronitis is defined as inflammation in the soft tissues surrounding the crown of a partially erupted tooth. It generally does not arise in teeth that erupt normally; usually, it is seen in teeth that erupt very slowly or become impacted, and it most commonly affects the lower third molar. Once the follicle of the tooth communicates with the oral cavity, it is thought that bacterial ingress into the follicular space initiates the infection. Several studies have shown that the microflora of pericoronitis are predominantly anaerobic.^{1,2,3,4,5,6} It is generally agreed that this process is potentiated by food debris accumulating in the vicinity of the operculum and occlusal trauma of the pericoronal tissues by the opposing tooth.

Clinically, pericoronitis can be acute or chronic. The acute form is characterised by severe pain, often referred to adjacent areas, causing loss of sleep, swelling of the pericoronal tissues, discharge of pus, trismus, regional lymphadenopathy, pain on swallowing, pyrexia, and in some cases spread of the infection to adjacent tissue spaces. Patients with chronic pericoronitis complain of a dull pain or mild discomfort lasting a day or two, with remission lasting many months. They may also complain of a bad taste. Pregnancy and fatigue are associated with an increased occurrence of pericoronitis.

Bilateral pericoronitis is rare and strongly suggests underlying infectious mononucleosis. In a study by Nitzan *et al* (1985) reviewing the clinical aspects of pericoronitis, from a sample of 245, the

highest incidence of pericoronitis was found in the 20-29 year age group (81%).¹ The condition was rarely seen before 20 or after 40. The general health of the patient was not found to be a predisposing factor, other than upper respiratory tract infection, which preceded the occurrence of the disease in 43% of cases. Emotional stress preceding the manifestation of pericoronitis was reported in 66% of the sample. There was also a significant correlation between oral hygiene and the severity of the condition. The acute form tended to appear in cases of moderate or poor oral hygiene, while the chronic type was associated with good or moderate hygiene. There was no significant difference between the sexes. A seasonal variation was noted, the peak incidences occurring in June and December. In 67% of the cases the involved tooth was classified as vertical, in 12% as mesio-angular, in 14% as disto-angular, and various other positions represented 7%.

Treatment

For patients presenting with localised pain and swelling involving the pericoronal tissues, and in the absence of regional and systemic symptoms, it is recommended that local measures only are used. These include debridement of plaque and food debris, drainage of pus, irrigation with sterile saline, chlorhexidine or hydrogen peroxide, and elimination of occlusal trauma. In the past the use of caustic agents such as chromic acid, phenol liquefactum, trichloroacetic acid or Howe's ammoniacal solution was advocated to control pain by placing a small

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FIGURE 1: Radiographic examination of the tooth in January 2007.



FIGURE 2: Review of the patient in 2008.

amount on a cotton pledget under the operculum. The resultant chemical cauterisation of the pain nerve endings in the superficial tissues gave rapid pain relief; however, the use of these toxic chemicals in the oral cavity is no longer encouraged. Ozone has been put forward as a local antimicrobial that might be a useful adjunct in the treatment of pericoronitis; however, there is no research available to show its efficacy as yet.

In addition to local pain and swelling, if the patient is exhibiting regional or systemic signs and symptoms, antimicrobial therapy is recommended; however, it should be emphasised that it is as an adjunct rather than a first-line treatment. Systemic symptoms include pyrexia, tachycardia and hypotension. The antibiotic of choice is either metronidazole 400mg three times a day for five days or phenoxymethylpenicillin 500mg four times a day for five days. The two can be used in combination for severe infections. For patients who are allergic to penicillin, erythromycin 500mg four times a day for five days is suitable. These are all active against anaerobic bacteria, which are the predominant cultivable microflora found in pericoronitis and are the first-line antibiotics of choice. Once the acute phase of this condition has passed, operculectomy has been used as a preventive measure; however, there is no research to support or condemn this mode of treatment.

Case study

This case is an illustration of the clinical dilemma that clinicians are faced with when treatment planning for lower third molars.

A 52-year-old female patient presented for review in the Oral and Maxillofacial Department in early 2008. Originally she had been referred by her general dental practitioner having suffered two episodes of pericoronitis requiring antibiotics involving the lower right third molar in 2006, thus fulfilling the National Institute of Clinical Excellence guidelines for the extraction of third molars.⁹ The antibiotics used were not stated by the referring dentist. She was

assessed in clinic in January 2007. On examination at that time her lower right third molar was found to be partially erupted, buccally placed, and with no signs of previous infection in the pericoronal tissues. Radiographic examination showed that the tooth was slightly disto-angular, below but close to the occlusal plane, with a conical root, which was closely related to the upper border of the inferior alveolar nerve canal (**Figure 1**). There was no periodontal bone destruction, nor was there rarefying osteitis distal to the crown of the tooth, indicative of chronic infection.

On the basis that this tooth had given rise to two recent infections, the decision was taken to extract this tooth under local anaesthetic on a dento-alveolar surgery list and she was put on the waiting list, which was at the time around 10 months. She was scheduled to have the tooth removed in November 2007, but at the last minute cancelled the appointment and requested a further clinical review on the basis that she had had no symptoms in over a year and was concerned about the possibility of nerve damage as a result of the procedure. She had been given the usual warnings about the possibility of damage to the inferior alveolar and lingual nerves, and in her case that the apex of her third molar was in close proximity to the upper border of the inferior alveolar nerve canal.

On review in 2008, clinically and radiographically both the lower right third and second molars were free of pathology. The tissues around the third molar appeared healthy, as can be seen in **Figure 2**.

After a discussion with the patient it was decided not to extract it on the basis that it was now free of pathology and the patient did not want to risk any long-term morbidity unless the extraction was absolutely necessary. It was not possible to give this patient definitive advice as to whether or not this tooth would give trouble in the future.

Discussion

Mercier and Precious (1992) reviewed the literature in terms of the risks and benefits of third molar surgery under the headings of: risks

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of non-intervention versus intervention; and, benefits of non-intervention versus intervention (**Table 1**).⁷

They conclude that absolute indications and contra-indications for the removal of asymptomatic third molars cannot be established as no long-term studies exist to validate either early removal or deliberate retention of these teeth. The National Institute of Clinical Excellence in the UK has adopted the following guidelines for clinical practice in the National Health Service:⁸

1. The practice of prophylactic removal of pathology-free impacted third molars should be discontinued in the NHS.
2. The standard routine programme of dental care by dental practitioners and/or paraprofessional staff need be no different, in general, for pathology-free impacted third molars (those requiring no additional investigations or procedures).
3. Surgical removal of impacted third molars should be limited to patients with evidence of pathology. Such pathology includes unresorable caries, non-treatable pulpal and/or periapical pathology, cellulitis, abscess and osteomyelitis, internal/external resorption of the tooth or adjacent teeth, fracture of tooth, disease of follicle including cyst/tumour, tooth/teeth impeding surgery or reconstructive jaw surgery, and when a tooth is involved in or within the field of tumour resection.
4. Specific attention is drawn to plaque formation and pericoronitis. Plaque formation is a risk factor but is not in itself an indication for surgery. The degree to which the severity or recurrence rate of pericoronitis should influence the decision for surgical removal of a third molar remains unclear. The evidence suggests that a first episode of pericoronitis, unless particularly severe, should not be considered an indication for surgery. Second or subsequent episodes should be considered the appropriate indication for surgery.

This lower right third molar has been partially erupted for at least 20 years (the patient cannot recall beyond that) and was associated with two episodes of infection that had completely resolved. Part of the reason for this may be the patient's good plaque control, but other than this, it is difficult to explain why the pericoronal tissues have not become chronically infected as happens around so many partially erupted third molars, and it is impossible to give a clear prognosis. This demonstrates the dilemma clinicians face when advising patients. If the tooth is not removed, there is a risk of the development of a serious infection that sometimes requires hospitalisation and can even be life threatening, for example if the infection spreads to the submandibular and sublingual spaces (Ludwig's angina) or the parapharyngeal space (parapharyngeal abscess). Ludwig's angina presents with pyrexia and malaise, elevation of the tongue and floor of mouth, difficulty swallowing, slurred speech and board like swelling of the submandibular tissues, eventually involving the anterior neck. Parapharyngeal abscess presents with considerable pyrexia and malaise, extreme pain on swallowing, dyspnoea and deviation of the larynx to one side. These conditions warrant urgent surgical intervention to secure the airway and to drain and decompress the affected tissue spaces.

If the tooth is removed, there is the risk of major permanent outcomes, especially that the patient could be left with permanent

Table 1: Risks and benefits of third molar surgery

	Non-intervention	Intervention
Risks of	<ul style="list-style-type: none"> ■ Crowding of dentition based on growth prediction. ■ Resorption of adjacent tooth and periodontal status. ■ Development of pathological conditions such as infection, cyst, tumour. 	<ul style="list-style-type: none"> ■ Minor transient: sensory nerve alteration, alveolitis, trismus and infection. ■ Haemorrhage. Dentoalveolar fracture and displacement of tooth. ■ Minor permanent: periodontal injury, adjacent tooth injury, TMJ injury. ■ Major permanent: altered sensation, vital organ infection, fracture of mandible. ■ Litigation.
Benefits of	<ul style="list-style-type: none"> ■ Avoidance of risk. ■ Preservation of functional teeth. ■ Preservation of residual ridge. 	<ul style="list-style-type: none"> ■ In relation to age, i.e., less morbidity post op in younger patients. ■ In relation to different therapeutic measures.

anaesthesia, paraesthesia or dysaesthesia affecting her lower lip or tongue. This case study illustrates the need for informed valid consent and the need for the clinician and patient to balance the risk-benefit analysis for their surgical procedure.

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Identifying orthodontic problems

DR CIARA SCOTT and DR SHEILA HAGAN present a guide for the busy practitioner in examining the developing dentition and deciding when to intervene and when to refer.

Orthodontic treatment benefits many of our child patients. It can sometimes be difficult to know what to be concerned about and when may be the most appropriate time to refer a child to a specialist for orthodontic treatment, or for advice with regard to management or interception for a younger child.¹

Primary dentition

It is rare for orthodontic treatment to be indicated in the primary dentition, but this stage is fundamental in establishing the dentition and in establishing the dental health required for future orthodontic treatment.



FIGURE 1a: Poor oral hygiene will compromise suitability for orthodontic treatment.



FIGURE 1b: Decalcification of the occlusal surfaces has occurred as a result of fizzy drinks while wearing a removable appliance.



FIGURE 2: Severe crowding as a consequence of tooth decay and early primary extractions.

PROBLEM	INTERVENTION	REASONING
Dental health (Figures 1a and 1b)	Developing good habits from an early age can help to avoid some orthodontic problems. Early loss of primary teeth due to caries can cause localisation of crowding and contribute to malocclusion. Poor motivation and dental anxiety can compromise orthodontic treatment. ²	Early loss of primary teeth can cause crowding and crossbites due to arch contraction. ² Prevention of dental disease and maintenance of an intact primary dentition can simplify orthodontic treatment later. Orthodontics will be more efficient and more successful in a well motivated patient with a caries-free and well maintained dentition. It is important that patients and their parents understand this.
Teeth present	When examining a child for the first time, a history is established from the parent for any missing teeth. Occasionally, primary teeth are congenitally missing, impacted or infraoccluded. They may displace permanent successors.	Contralateral teeth usually erupt within six months of each other. Radiographs may be indicated if an unusual sequence of eruption is identified. Congenitally missing primary teeth may be associated with a syndrome, so full medical history should be taken and the patient referred to a paediatric dentist.
Anomalies	Sometimes gemination, fusion, hypodontia or supernumerary teeth can occur in the primary dentition.	Usually, no intervention is required unless the teeth are preventing eruption of permanent teeth. It is likely that there may be missing or supernumerary permanent teeth if anomalies are present in the primary dentition, so parents can be warned of this possibility.
Early loss of primary teeth (Figure 2)	Pain, trauma, decay or infections take priority in the young child. If a tooth has to be lost or extracted, any consequent orthodontic problem has to be dealt with as a secondary problem at a later date.	Unless co-operation and oral hygiene are excellent, space maintainers are not usually suitable for very young children. It is important to establish and maintain good oral health from a young age.
Spacing and crowding	The primary dentition is best spaced. Crowding is more likely in the permanent dentition if there is crowding in the primary dentition.	Advise parent, but no treatment indicated.

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The mixed dentition

This is the stage when the occlusion is starting to establish. Most children will benefit from a full orthodontic examination by their general practitioner at the age of 10.



FIGURE 3: An unerupted central incisor; the sequence is disrupted as the U2s have erupted.

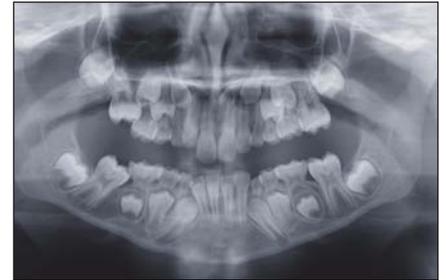


FIGURE 4: An impacted upper right first permanent molar.



FIGURE 4a: An impacted upper right first molar.



FIGURE 4b: An orthodontic separator is placed in the contact point. Specialists may progressively tighten a brass wire separator.



FIGURE 5: An anterior crossbite with mandibular displacement off LL1. There is some gingival dehiscence and mobility of this tooth.

FEATURE	INTERVENTION	REASONING
<p>Unerupted incisor (Figure 3)</p>	<p>Look for and palpate for the permanent tooth first. Disruption in the normal sequence of eruption may warrant further investigation. Take radiograph (occlusal view anterior maxilla or periapical) to locate the unerupted tooth if it has been more than six months since contralateral tooth erupted.³ Ask about any history of trauma and at what age this occurred. Look for any dilaceration or supernumeraries on the film.</p>	<p>Refer, as soon as the problem is identified, with the radiograph if you have taken one. The patient is likely to benefit from extraction of the primary incisor if this is present. The orthodontic plan would usually involve removal of any supernumerary teeth and surgical exposure of the unerupted incisor. Orthodontic traction/treatment may not be required if there is sufficient space for the tooth to erupt, so consider maintaining space if appropriate. A fixed or removable orthodontic appliance can be used to align the tooth.</p>
<p>Unerupted/impacted molar (Figure 4, 4a and 4b)</p>	<p>A permanent molar may become impacted against the primary molar. It may self-resolve but intervention is indicated if more than six months has elapsed since the contralateral tooth erupted. Treatment can involve: using an orthodontic separator to disimpact, or reduction of the distal aspect of the primary second molar. Extraction of E is indicated if disimpaction is not successful.</p>	<p>Refer for intervention treatment or for advice with regard to extraction of the primary second molar. The 6 will erupt more mesially if the E is extracted causing space loss. This can be managed later. When reducing the distal aspect of the E, a blunt ended diamond may be used, and care is needed to avoid iatrogenic damage to 6. Primary or secondary failure of eruption of permanent molars can occur. The prognosis of these molars may be poor, but intervention is required to reduce the risk of more distal teeth being affected. These should be referred.⁴</p>



FIGURE 6: UR1 is in crossbite with LR1; the unseen UR2 is also in crossbite with the instanding LR2.



FIGURE 7: The mandibular displacement off the instanding UR2 has caused labial gingival dehiscence and mobility LR1.



FIGURE 8: The overjet is 12mm and there is a full unit CI II molar relationship.



FIGURE 9: Increased and complete overbite. There is trauma to the lower labial gingivae.



FIGURE 10: A simple URA with active flat anterior bite plane, to allow the lower molars to erupt and therefore reduce the overbite.



FIGURE 11: Un-erupted and non-palpable UL3 in the permanent dentition.

FEATURE	INTERVENTION	REASONING
Crossbites (Figures 5, 6 and 7)	<p>When an anterior or unilateral posterior crossbite occurs, there is often a mandibular displacement present.</p> <p>Indications for early correction of crossbites are:</p> <ul style="list-style-type: none"> ■ mandibular displacement, forward or laterally from RCP; ■ wear facet/trauma to a tooth in crossbite; ■ dehiscence or trauma to the gingivae; and, ■ mobility of the teeth. <p>Mandibular displacements may precede TMD. If RCP develops in a displaced position, then interceptive orthodontic treatment is indicated to establish good occlusal development.</p>	<p>Refer for opinion/treatment.</p> <p>Studies have suggested that early correction of crossbites can prevent the crossbite being perpetuated into the permanent dentition.⁵ This may be achieved with occlusal grinding of primary teeth or a removable or fixed appliance.</p> <p>Early interceptive treatment relies on the child's co-operation and good oral hygiene, so treatment may be postponed if this is poor. Primary teeth have poor undercuts so retention of a URA may be more difficult in the early mixed dentition, especially if teeth are due to exfoliate.</p>
Overjet (Figure 8)	<p>It has been shown that there is an increased risk of incisor trauma in children with an overjet >6mm. Increased overjets are usually most ideally treated in the late mixed dentition.</p>	<p>Refer with view to functional appliance treatment. This is most efficient after the first premolars have erupted. Early treatment may be indicated if severe OJ and risk of trauma, or if the child is being teased. Use mouth guard for bicycle and contact sports to aid prevention of incisor trauma.</p>
Overbite (Figures 9 and 10)	<p>Check for any trauma or stripping of the lower labial or upper palatal gingivae.</p> <p>An overbite is very deep if there is no lower incisor show in occlusion.</p> <p>Overjets, overbites and skeletal disproportion are much more simply treated in the growing patient, and most efficiently treated in the late mixed dentition.</p>	<p>Early referral is indicated if gingival trauma is observed. Interceptive management with a bite plane may be indicated. Deep overbites may deepen and become traumatic with growth. Treatment of deep or traumatic overbites is much more complex in a non-growing patient⁶ (Figure 11).</p>

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FIGURE 12: This 13-year-old patient is in the permanent dentition, with 7s erupted, but the ULC is firm with no buccal prominence. The lateral incisor is flared.



FIGURE 13: CI III malocclusion; this is a postural CI III malocclusion as the patient can achieve edge to edge and is displacing forward.



FIGURE 14: A simple URA with a hyrax screw and posterior bite planes to allow correction of the crossbites and displacement.



FIGURE 15: Skeletal discrepancy in this high angle CI III patient.



FIGURE 16a: Infraocclusion of the primary second molars.



FIGURE 16b: The permanent successors are present.

FEATURE	INTERVENTION	REASONING
Poor prognosis of teeth (esp. 6s)	Timing of first molar extractions can be crucial. It can simplify orthodontic treatment later or even reduce the need for orthodontics. Compensating and balancing extractions are not always appropriate, especially if the child will co-operate with orthodontic treatment later.	Refer for opinion. Resolving acute pain and infection is paramount. Ideally, extractions can be planned in conjunction with orthodontics. Check for the presence of 5s and 8s prior to planning extractions.
Unerupted canines (Figures 11 and 12)	Canines are usually palpable in the buccal sulcus by nine-and-a-half years, and there should be a buccal prominence by the time the 4s have erupted. They should erupt within six months of the contralateral tooth having erupted. Palpate buccally and palatally and check for mobility of Cs. Also look for distobuccal flaring of 2s.	Obtain parallax shift radiographs: vertical (OPG and maxillary occlusal); or, horizontal (2x periapical or maxillary occlusal). Extracting Cs (between 10-13 years of age) may help the 3s to erupt or improve position if there is sufficient space in the arch. ⁷ Refer for an orthodontic opinion about extracting Cs in crowded cases or if canine is very high, very mesial or looks unfavourable radiographically. If 3s are in a favourable position, they should erupt within 6-12 months of the C's extraction.
Class III (Figure 13)	Unlike Class II cases, Class III problems are less successfully intercepted in growing patients.	Refer for an opinion. Early treatment of Class III cases is most successful in low angle/deep bite cases, in patients who have a mandibular displacement and can achieve an edge to edge bite. Observation may be appropriate. Treatment may be by camouflage or surgery later depending on patients' concerns. A definitive treatment plan may not be finalised until late teens when most growth is completed.



FIGURE 17a: Infraocclusion of the primary first molars associated with missing upper lateral incisors and palatal upper canines.



FIGURE 17b: Infraocclusion, hypodontia and ectopic canines can be related. This patient will benefit from extraction of the upper Cs and Ds and specialist review of occlusal development.



FIGURE 18: A lower lingual arch can act as a space maintainer or to utilise leeway spaces.

FEATURE	INTERVENTION	REASONING
Skeletal discrepancies (Figure 14 and 15)	A skeletal discrepancy can occur in all three dimensions. Antero-posterior (class II and III), transverse (asymmetry) or vertical (deep or open bite tendency). A mandibular displacement can cause an asymmetry or exaggerate a skeletal problem but this is not a true skeletal asymmetry.	Refer for opinion early. Patients with severe skeletal discrepancy benefit from joint orthodontic and surgical planning. The optimal treatment for severe skeletal problems is usually orthognathic surgery, but other treatment options may be indicated.
Infraocclusion (Figures 16a, 16b, 17a and 17b)	The second primary molars are most commonly affected. It can be severe if it occurs in a young child and affects Ds and Es. An OPG may be indicated to check for the presence and position of the permanent successor teeth.	Refer for orthodontic/paediatric opinion. Management depends on age, site and severity. If the tooth becomes infraoccluded very early or is below the contact point, extraction is more likely to be indicated. If a permanent successor is present, the infraoccluded tooth should exfoliate, but this may be delayed. ⁸
Retained/missing teeth	If you suspect/diagnose hypodontia in a child of any age then a thorough history including family history is indicated. There can be a wide variation of normal occlusal development. Check if the sequence of eruption is disrupted. Excellent oral health, preservation of primary teeth and prevention of decay and further tooth loss is essential for patients with hypodontia. Primary molars should be restored and maintained until a definitive plan is in place.	Refer for specialist opinion. These patients benefit from joint orthodontic and restorative planning. The orthodontic plan will depend on the site and severity of hypodontia and the overall malocclusion. Often primary molars can be preserved for a long time if the permanent successors are missing. ⁸ If they become infraoccluded, they may need to be extracted as this can compromise the alveolar bone and periodontal tissues. Hypodontia and infraocclusion are associated with an increased risk of impacted canines. ⁹
Crowding (Figure 18)	Assess for crowding and spacing at around the age of 10 in the mixed dentition. On average, 21mm of space is required in the lower arch between the lateral incisor and the first molar to accommodate the canines and premolars, and 22mm in the upper arch.	Refer for an orthodontic assessment. At this mixed dentition stage, it is possible to: <ol style="list-style-type: none"> 1. Intercept with extractions to allow blocked out teeth to drop into place. 2. Fit an appliance, such as a lingual arch, to maintain space or utilise leeway space. 3. Fit active appliances to expand the arch or distalise the molars to open space for crowded teeth. Once the occlusion is established and teeth are blocked out, it is more difficult to accommodate them without extractions.

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FIGURE 19: Over-retained primary teeth. They need to be extracted if they fail to exfoliate when permanent successors erupt.



FIGURES 20-22: Aesthetic component criteria.

FEATURE	INTERVENTION	REASONING
Retained primary teeth (Figure 19)	Over-retained primary teeth, which fail to exfoliate when the permanent teeth are erupting, can create plaque traps and can cause deflection of the permanent successor.	Extraction is indicated of over-retained primary teeth that do not exfoliate when permanent successors erupt, especially if the permanent tooth is displaced from the arch or oral hygiene is poor in that area. Refer for opinion if concerned.

When referring patients for an orthodontic opinion, it is helpful if the referral contains the patient's name, age, and any relevant medical, dental and social history. Also include details of any specific concern you have. Please forward any recent radiographs. It is also helpful to make it clear if you feel the case is urgent. Orthodontists may give an opinion based on a photograph or radiograph. Full clinical examination does give a more comprehensive assessment of the orthodontic needs.

The general practitioner is responsible for monitoring the developing dentition, promoting prevention and identifying potential problems as they arise. A good working knowledge of the Index of Treatment Need IOTN¹⁰ can help to identify the most severe problems and identify those patients who may be eligible for treatment within the HSE orthodontic service.

Access to orthodontic treatment within the HSE is by referral by the HSE public dental service and the principal dental surgeon for each area.

2007 HSE Guidelines¹¹

Grade 5 Treatment required

- 5.a Increased overjet >9mm
- 5.h Extensive hypodontia with restorative implications (more than one tooth missing in any quadrant requiring pre-restorative orthodontics). Amelogenesis imperfecta and other dental anomalies which require pre-prosthetic orthodontic care.
- 5.i Impeded eruption of teeth (apart from 3rd molars) due to crowding, displacement, the presence of supernumerary teeth, retained deciduous teeth, and any pathological cause
- 5.m Reverse overjet >3.5mm with reported masticatory and speech difficulties

5.p Defects of cleft lip and palate

5.s Submerged deciduous teeth – arrange removal of teeth but orthodontic treatment not necessarily provided

Grade 4 Treatment required

- 4.b Reverse overjet >3.5mm with no masticatory or speech difficulties
- 4.c Anterior or posterior crossbites with >2mm discrepancy between the retruded contact position and intercuspal position
- 4.d Severe displacements of teeth >4mm but only with Aesthetic Component of Figures 20-22 .
- 4.e Extreme lateral or anterior open bites >4mm
- 4.f Increased and complete overbite with gingival or palatal trauma
- 4.l Posterior lingual crossbite with no functional occlusal contact in one or more buccal segments
- 4.m Reverse overjet >1mm but <3.5mm with recorded masticatory and speech difficulties

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Dr Sheila Hagan is a Specialist Registrar in Orthodontics at the Regional Orthodontic Unit, St James's Hospital, Dublin, and the Dublin Dental Hospital.

SEPTEMBER**IDA Golf Society – Captain's Prize**

September 5 Carlow Golf Club

Council of the Irish Dental Association – Meeting

September 12 IDA House

Metropolitan Branch – Joint Endodontic Scientific Meeting

September 17 Dublin 4 Hotel

Further details to follow when available

Irish Academy of American Graduate Dental Specialists**(IAAGDS) – Annual Scientific Conference**

September 26 Conrad Hotel, Earlsfort Terrace, Dublin 2

Time: 9.00am-1.00pm (short lectures). Free to attend for all dentists.

OCTOBER**Public Dental Surgeons Seminar 2009**

October 7-9 Whites Hotel, Wexford

Metropolitan Branch – Scientific Meeting: 'Cross Infection Control'

October 9 Dublin 4 Hotel

Further details to follow when available

NOVEMBER**Council of the Irish Dental Association – Meeting**

November 14 IDA House

Munster Branch – Annual Scientific Meeting

November 20 Sheraton Hotel, Fota Island, Cork

Speaker: Dr Jens Andreasen, on 'Dental traumatology'. All enquiries to IDA House, Tel: 01-295 0072

Metropolitan Branch – Scientific Meeting – Restorative Dentistry

November 26 Dublin 4 Hotel

Further details to follow when available

DECEMBER**IDA Golf Society – Christmas Hamper**

December 11 The Royal Dublin Golf Club

FEBRUARY 2010**Council of the Irish Dental Association – Meeting**

February 6 IDA House

APRIL 2010**Council of the Irish Dental Association – Meeting**

April 17 IDA House

MAY 2010**IDA Annual Conference: 'Pearls of Wisdom'**

May 12-15 Radisson Hotel, Galway