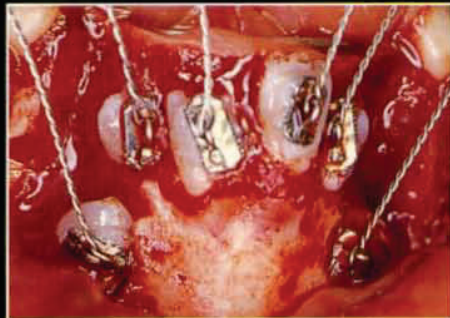
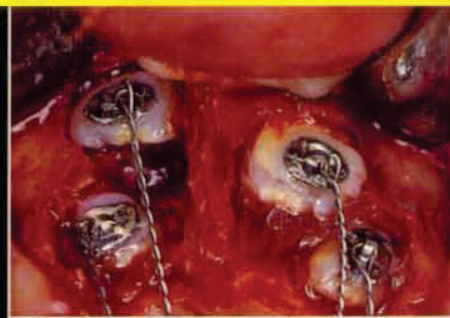


The Orthodontic Treatment of Impacted Teeth

Adrian Becker



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The Orthodontic Treatment of Impacted Teeth

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CONTENTS

Preface	vii
1. General principles related to the diagnosis and treatment of impacted teeth	1
2. Radiographic methods related to the diagnosis of impacted teeth	13
3. Surgical exposure of impacted teeth	25
4. Treatment strategy	43
5. Maxillary central incisors	53
6. Palatally impacted canines	85
7. Other single teeth	151
8. Impacted teeth in the adult	179
9. Cleidocranial dysplasia	199
Index	231

reopening of the space for the missing tooth is undertaken.

At this point, the palatal arch is constructed on a plaster model, into which the molar bands have been accurately seated and the artificial tooth sited, as described above. The patient's denture is now discarded or the over-retained deciduous tooth is extracted, and the palatal arch carrying the artificial incisor tooth is inserted by recementing the molar bands to their former place.

When moving teeth mesio-distally along an archwire with a multibracketed fixed appliance, the establishment of interproximal contacts between the teeth enables a high degree of control of individual tooth position. Once this has been achieved, uprighting and torqueing movements may be carried out, with care being taken to see that the spaces do not reopen. The desired treatment result includes closed contacts.

In the situation where a tooth is unerupted and space must be made for it, the orthodontist should err on the side of reopening excess space and then maintaining it until the tooth reaches its place. However, to do so, the space needs to be maintained during the many further months of treatment, when the adjacent teeth will be altering their relationships to one another. While attention is diverted to the details of the treatment in these other areas, changes may inadvertently alter the space. The original coil spring, which may have opened the space, must be de-activated, since it will otherwise continue to increase the dimensions of the space. However, the placement of active root-uprighting springs will tend to close the space by compressing the spring.

The size of the artificial incisor tooth and its mesio-distal siting may be very useful in holding the achieved space and in ideally placing the adjacent teeth, regardless of their locations and without the need for the coil spring or the ligation of groups of teeth. The natural teeth are swiftly brought into interproximal contacts with the artificial tooth and with each other, and this status is then simple to maintain.

TEMPORARY PROSTHETIC REPLACEMENT AND TOOTH TRANSPOSITION

Rarely, one or more of the impacted teeth is also transposed. For the most part, it is preferable to align the teeth in their transposed positions, rather than to try to retranspose them to their ideal positions, for reasons already discussed in Chapter 6. Nevertheless, there are situations in which this may be the preferred line of treatment.

Given the high frequency of missing lateral incisors in cases of transposition of maxillary canine/first premolar transposition (Peck et al, 1993), treatment of the transposition may have to consider the artificial replacement of the missing teeth during the appliance therapy. The use of a palatal arch to augment the anchorage value of the molar teeth and to provide the vehicle for the artificial replacement teeth is an effective way to deal with this problem (Fig. 8.6).

By tying in a labial archwire from molar to molar, passing through a bracket on each of the artificial lateral incisors, these strategic points on the perimeter of the arch are defined in relation to one another, since the incisor pontics are also rigidly fixed to the molar bands on the lingual side. The small section of labial archwire that intervenes between molar tube and incisor bracket is therefore well supported in terms of anchorage, and may be used to slide the more buccal of the transposed teeth (usually the canine) in the mesio-distal plane. At the same time, the more lingual of the transposed teeth must be moved further lingually to allow its partner to pass by. Finally, it must be moved in the opposite mesio-distal direction and back in the line of the arch.

To achieve this, the more lingual tooth may be ligated to several different and strategically planned loops and cross-pieces, which will have been prepared on the palatal arch ahead of time, using elastic thread. Once again, positive use is made of the palatal arch as an integral part of the orthodontic appliance system, and it is not merely a means of supporting an artificial tooth.



Figure 8.6

(a–c) A 27-year-old female with congenitally absent maxillary lateral incisors and maxillary canine/first premolar bilateral transposition. The deciduous canines and right lateral incisor are still present. (d) Occlusal view of maxillary arch. (e–g) Intra-oral views after extraction of deciduous teeth. (h–j) Treatment progress, seen from the right side. (k,l) Use of palatal arch as support for lateral incisor pontics and also to move premolars through varying use of elastic thread. (m) Occlusal view of complete maxillary dentition, with wire splint from first premolar to first premolar, including lateral incisor pontics. (n–p) Intra-oral views of the completed orthodontic result. The patient was referred for permanent prosthodontic treatment of the lateral incisor problem.

(Figure 8.6 continued)



(g)



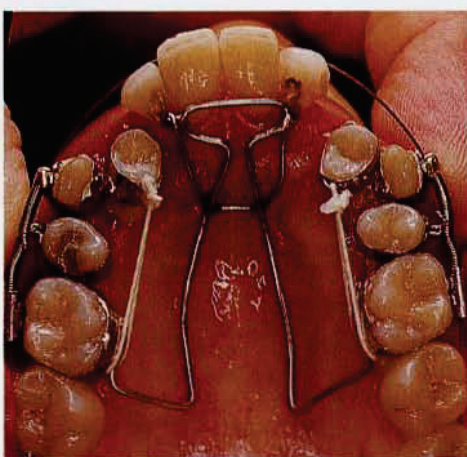
(h)



(i)



(j)



(k)



(l)

(Figure 8.6 continued)



(m)



(n)



(o)



(p)

THE UNERUPTED THIRD MOLAR AS A POTENTIAL BRIDGE ABUTMENT OR AS AN ANTAGONIST FOR AN UNOPPOSED TOOTH

In the previous chapter, we discussed the uprighting of molar teeth that were prevented from erupting, partially or fully, by their relationship with an immediate mesial neighbour. It is pertinent in the context of the present chapter to discuss a different scenario that commonly presents.

Following the extraction of posterior teeth in the adult patient, the establishment of a 'free-end edentulous saddle' makes oral rehabilitation problematic. This may sometimes find a potentially convenient solution in the discovery of an unerupted third molar. However, the absence of standing posterior teeth creates mechanotherapeutic difficulties

in providing the vertical traction that is aimed at enhancing the eruptive potential of an unerupted third molar.

Elastic traction of the tooth to the opposing jaw is a useful method, and has been referred to above (Orton et al, 1995), but the use of removable appliances in the adult patient is unreliable. Adults have far greater difficulty becoming accustomed to the bulk of the removable plate and its interference with masticatory and articular function. The use of a fixed mandibular appliance offers a much more satisfactory and dimensionally modest alternative, which interferes neither with eating nor with speech. Furthermore, if the mandibular appliance is to be used only as a source of anchorage, brackets and archwires may be dispensed with, making it very inconspicuous indeed.

An unopposed second molar in the opposite arch is the tooth that faces the potential

manner similar to that occurring with normal, unassisted eruption in the normal patient (Becker et al, 1983; Kohavi et al, 1984). This will enhance the vertical height of the alveolar processes of the two jaws, incidentally deepening the labial and lingual sulci and improving the overall facial proportions.

In the other two methods, the need to maintain patency of the exposure and visual contact with the unerupted teeth dictates that the bone level must be pared down to that of the deepest tooth. This clearly includes the reduction of both the lingual and buccal cortical plates to this level – and this in a patient whose alveolar processes are already of reduced height, because of the syndrome.

PATIENT VARIATION

Similarities are seen among all of the patients suffering from cleidocranial dysplasia, but there is a varying degree of expression of the various characteristic features of the disease, together with many other sporadic phenomena that have been reported to occur with the condition. Erupted permanent incisors are sometimes seen, and these may eliminate the need for the 'incisor-erupting' initial heavy archwire, in one or both arches. Instead, the treatment may begin with the levelling phase with the modified Johnson twin-wire arch.

Some patients make their appearance for the first time at an advanced dental age, when root apex closure has occurred in most of the erupted and unerupted teeth. Obviously, there is no developmental determinant to dividing the treatment into the above-mentioned stages, although it may still be advisable from a strictly mechanical point of view. It is difficult to design an appliance that may efficiently extrude teeth in several areas at the same time. Nevertheless, the inclusion of the canines with the anterior teeth may have some merit in these cases.

At the completion of all the treatment and the placement of retainers, new radiographs should be taken to check for the development of recurrent supernumerary teeth, which sometimes occurs in the 14–16-year-old



Figure 9.20

Panoramic radiograph of a patient 12 years after all appliances were removed. A newly developing supernumerary premolar tooth is noted.

patient (Fig. 9.20). At this point, any decision regarding the extraction of such teeth is strictly a surgical one (Becker et al, 1982; Becker and Shteyer, 1987). When such teeth are identified at this late stage, their extraction is no longer an orthodontic decision, since full alignment of the teeth has been achieved and suitable retention will prevent any adverse effects. Such factors as location and accessibility, incipient resorption of neighbouring erupted teeth, and cysts will all influence the surgeon regarding the necessity and timing of their extraction.

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Index

Page numbers in *italic* refer to the illustrations

active palatal arches 121–2, 123
 active removable plates 181–2, 188
 Adam's clasp 166, 181
 adult patients
 diagnosis 178–80
 management 180–1
 temporary prostheses 181–7
 alignment
 group 1 canines 117, 117
 group 2 canines 120–3, 120
 group 3 canines 131–4
 group 4 canines 134
 group 5 canines 135–9
 spontaneous 62
 anchor teeth 187
 anchorage
 implants 196
 units 44, 109, 120, 167
 Angle's Class II malocclusion 10
 ankylosis 29, 35, 45, 81
 crown resorption 171–2
 apical root dilaceration 73
 appearance 10–11, 62–3, 202, 211
 appliances 109
 see also mechanotherapy
 active removable plate 181–2
 Adam's clasp 166, 181
 adult patients 193, 194
 auxiliary labial wire 122–3, 124
 auxiliary springs 37, 38, 48–9
 ballista 37, 121, 122
 Begg brackets 65, 222
 box elastics 72, 215–16
 brackets 46–7, 46
 buttons 77, 81, 170
 early mixed dentition 63–4
 ectopic first molars 166
 Edgewise brackets 46, 65, 159
 eruption 113
 extra-oral headgear 157, 169
 'finger' spring 164
 fixed versus removable 166

flipper (spoon) dentures 72, 179, 181, 187
 Johnson's (modified) twin-wire arch
 maxillary central incisors 64–8, 67–70
 root dilaceration 74, 78
 magnets 50, 50
 mandibular second molars 167, 168
 multi-bracketed 44, 190
 orthodontic bands 46
 removable 123
 separators 166
 Siamese brackets 46, 167
 threaded pins 45–6, 45
 arch lengths 111
 archform 110–11, 217
 archwires
 anchorage bases 44
 buccal 68
 elastic displacement 49
 incisor-aligning 64, 213, 216–17, 217
 incisor-erupting 213, 213, 214, 215
 mandibular canines 154
 palatally displaced canines 111–12
 tooth transposition 190
 attachments 44–8
 bonding 30, 31, 36–40, 38
 buttons 77, 81
 extra-oral anchorage 196
 eyelets 37, 39, 47–8, 47
 group 1 canines 118–19
 group 2 canines 120
 group 3 canines 130–1
 Goshgarian bar 186–7, 188–9
 auxiliary labial wires 122–3, 124
 auxiliary springs 37, 38, 48–9, 120–3, 124
 ballista 37, 121, 122
 bands, orthodontic 46
 Begg brackets 65, 222
 Begg technique 111–12
 Belfast-Hamburg approach 205–7
 bonding 46
 acid-etch 159

agents 39
 attachments 30, 31, 36–40, 38
 unfilled resin 196
 bone
 channelling 26
 cleidocranial dysplasia 207
 height 71
 support 113–14, 114
 box elastics 72, 215–16
 brackets, orthodontic 46–7, 46
 bridge abutment 193, 196
 buccal arches 187
 buccal impaction
 maxillary canines 151–3, 152–3
 surgical exposure 30–2, 31, 32
 buccal traction 128, 132–3
 buttonholing 32, 32
 buttons 77, 81, 170
 canines
 CT scanning 22
 deciduous
 cystic changes 97–98, 97
 extraction 102, 103, 104
 morbidity 96
 root non-resorption 90, 91
 development 86–8, 87
 eruption 6, 88
 mandibular 4, 154–6, 154, 155, 156, 188–9
 maxillary 89
 eruption 26
 impaction, buccal 151–3, 152–3
 inspection 100
 missing 186–7
 palatal 15
 radiography 21
 root development 4
 palatal
 classification 112–47
 displacement theories 88–96
 impaction 86
 complications 96–100
 diagnosis 100–1
 extraction 111, 113

- cont'd*
- group 1 115-19, 116-17
 - group 2 119-27, 119, 126-7
 - group 3 128-34, 129
 - group 4 134-5, 136-7
 - group 5 135-9, 138, 139
 - group 6 139-46
 - heredity 95-6
 - mechanotherapy 110-12, 110, 111, 112
 - prevalence 85-6
 - treatment, timing 101-9
 - radiography 19, 101
 - treatment, preventive 102-5
 - central incisors
 - congenital absence 53
 - diagnosis 59-61
 - dilaceration 21, 55-8, 72-6
 - eruption 53
 - prognosis 71-6
 - root development 55, 56, 58, 72-6
 - space loss 8, 16
 - treatment 61-82
 - central mandibular incisors 4-5
 - children
 - central incisors 53, 54, 62
 - dental age 1-6, 2, 4
 - diagnosis 8
 - orthodontic separators 166
 - surgical intervention 9
 - traumatic injury 55-9, 68-70
 - cleidocranial dysplasia 199-200, 200, 201, 202
 - Belfast-Hamburg approach 205-7
 - diagnosis 211
 - Jerusalem approach 207-9, 211-22, 226
 - long-term retention 210
 - patient variation 227
 - patient well-being 209, 210
 - Toronto-Melbourne approach 204-5
 - treatment 202-4, 222, 225, 226-7
 - computed tomography (CT) scanning 22, 23, 24
 - palatally impacted canines 99
 - cross-bite 182
 - crowding 7, 8, 32
 - cleidocranial dysplasia 209-10
 - extraction 111-12
 - mandibular canines 156
 - mandibular second premolars 157
 - maxillary first molars 165
 - palatally impacted canines 89-90, 89, 102
 - crowns
 - amputation 76
 - calcification 4
 - dilaceration 56, 73-4, 75
 - resorption 33
 - see also replacement resorption
 - ankylosis 171-2
 - impaction 169-70
 - palatally impacted canines 98, 98
 - CT see computed tomography
 - cysts
 - dentigerous 8, 98, 174, 176
 - palatally impacted canines 97, 97, 99
 - marsupialization 174
 - deciduous teeth
 - cystic changes 97-98, 97
 - extraction 102, 103, 104
 - retained 3, 3, 5, 8, 10
 - cleidocranial dysplasia 202, 207
 - mandibular second premolars 157-8
 - supernumerary teeth 16
 - surgical intervention 27-8
 - dental age 1-6, 102, 211
 - dental follicles
 - cystic change 97, 98, 99
 - surgical exposure of impacted teeth 9, 33-5, 34
 - dental history 59
 - dentigerous cysts 8, 174, 176
 - palatally impacted canines 97, 97, 99
 - development
 - canines 86-8, 87
 - dental age 1-6, 33
 - dental follicles 33
 - dilaceration 55-7
 - dilaceration
 - apical root 73
 - central incisors 21, 55-8, 60-1, 66, 72-6
 - Edgewise brackets 46, 65, 159
 - elastic ligatures 47-9, 48, 49, 72
 - elastic traction 193-96
 - enucleation 174
 - eruption
 - canines 6, 26, 88
 - delayed 3, 6-7, 53, 62
 - forced 113-14
 - full flap closure 31-2
 - maxillary central incisors 6, 53
 - premature 6, 9
 - primary failure of 171
 - spontaneous 62
 - surgical intervention 26-8, 27
 - traction 109
 - etching 38, 130, 196
 - exposure 27-8, 27, 28, 38, 109
 - extra-oral anchorage 196
 - extra-oral headgear 157, 169
 - extra-oral radiography 17
 - extraction
 - crowding 111-12
 - deciduous canines 102, 103, 104
 - dental age 2
 - first premolars 102, 105
 - infraocclusion 161
 - lateral incisors 103-5, 106
 - mandibular second premolars 157
 - palatally impacted canines 111, 113
 - preventive treatment 102-5, 103, 104, 105
 - eyelets 47-8, 47
 - attachment 37, 39
 - group 1 canines 118-19
 - group 2 canines 120
 - group 3 canines 130-1
 - facial appearance 10-11, 62-3, 202, 211
 - 'finger' spring 164
 - flipper (spoon) dentures 72, 179, 181, 187
 - follicular sacs 97, 98, 99
 - free-end edentulous saddles 193
 - gold chain ligatures 47
 - Goshgarian bar 186-7, 188-9
 - guidance theory 90-3
 - hard tissue obstructions 28-9
 - headgear 157, 169
 - healing, by secondary intention 9
 - heredity
 - cleidocranial dysplasia 199
 - guidance theory 95-6, 95
 - infraocclusion 171, 173
 - Hertwig's root sheath 57, 58, 58
 - impaction
 - buccal 151-3, 152-3
 - surgical exposure 30-2, 31, 32
 - complications 58
 - crown resorption 169-70
 - diagnosis 6-11, 9
 - disguise 178-80
 - guidance theory 90-3
 - hard tissue obstruction 28-9
 - neglect and disguise 178-80
 - obstructed 71-2
 - odontomes 86
 - palatal
 - complications 96-100
 - diagnosis 100-1
 - group 1 canines 115-19, 116-17
 - group 2 canines 119-27, 119, 126-7
 - group 3 canines 128-34, 129
 - group 4 canines 134-5, 136-7
 - group 5 canines 135-9, 138, 139
 - group 6 canines 139-46
 - heredity 95-6
 - mechanotherapy 110-12, 110, 111, 112
 - prevalence 85-6
 - treatment timing 101-9
 - radiography 13-24
 - surgical exposure 8-10, 25-41
 - traumatic causes 72-82
 - implants 180, 196

- incisor-aligning archwires 64, 213, 216-17, 217
- incisor-erupting archwires 213, 213, 214, 215
- incisors
- central
 - dilacerated 21
 - maxillary
 - arrested root development 58
 - congenital absence 53
 - diagnosis 59-61
 - eruption 53
 - obstructive causes 53-5, 71-2
 - prognosis 71-6
 - space loss 8, 16
 - traumatic causes 55-9, 72-5
 - treatment 61-82
 - missing 182-5
 - root development 4-5
 - eruption 6, 53
 - lateral
 - extraction 103-5, 106
 - maxillary 4-5, 10
 - palatally impacted canines 91-3, 92, 94, 99, 110, 110
 - root development 4-5, 10
 - root resorption 141, 142-3, 144-5, 146, 147-8
 - late 98-100, 99
 - maxillary 87, 147-8, 191-3
- infraocclusion
- deciduous teeth 159-61, 162, 163, 164-5
 - extraction 161
 - non-ankyrotic 172, 174
 - permanent teeth 170-4, 171, 172
 - surgical exposure 29
- intrusive luxation 58-9, 76-82, 77-80
- Jerusalem approach
- diagnosis 211
 - orthodontics 212-13, 213-18, 214, 220-2, 223-4
 - surgery 214, 219
- Johnson's (modified) twin-wire arch
- cleidocranial dysplasia 213
 - maxillary central incisors 64-5, 64, 66, 67-8, 67, 68-70
 - root dilaceration 74, 78
- lasso wires 45, 45
- lateral incisors
- extraction 103-5, 106
 - palatally impacted canines 91-3, 92, 94, 99, 110, 110
 - root development 4-5, 10
 - root resorption 98-100, 99, 141, 142-8
- lateral mandibular incisors, root development 4, 5
- lateral open bite 161, 163
- lesions, soft tissue 28
- ligatures
- elastic 48-9, 48, 49, 72
 - gold chain 47
 - pigtail 47-8, 214-15
 - slingshot elastic 49, 116, 118
 - stainless steel 47-8
- magnets 50, 50
- malocclusion 10, 44
- mandibles
- arch, radiography 14, 14
 - canines 4, 154-6, 154-6, 188-9
 - removable appliance 123
 - second molars 167, 169
 - second premolars 157, 157-9, 158, 160
- marsupialization 174
- maxilla
- anterior occlusal 14, 15
 - arch radiography 14, 15
 - canines 89
 - eruption 26
 - impaction, buccal 151-3, 152-3
 - inspection 100
 - missing 186-7
 - palatal 15
 - radiography 21
 - root development 4
 - central incisors
 - arrested root development 58
 - congenital absence 53
 - diagnosis 59-61
 - prognosis 71-6
 - space loss 8, 16
 - treatment 61-82
 - first molars 165-7, 175-6
 - first premolars, root development 4
 - incisors 87, 147-8
 - lateral incisors, root development 4-5, 10
 - second premolars 161, 162, 163, 164-5
- mechanotherapy
- see also appliances
 - cleidocranial dysplasia 208-9
 - eruptions 62
 - group 5 canines 138-9, 138
 - palatally impacted canines 109-12
 - timing 105, 108-9
- medical history 59
- mesial crown displacement 118-19
- molar bands 187, 188, 190
- molars
- elastic traction 193-6
 - eruption 6
 - mandibular second 167, 169
 - root development 4-5
 - second deciduous 159-61
 - third 193, 196
- mosquito forceps 39
- Nasmyth's membrane 36
- odontomes 7, 54, 60
- Ong's projection 15
- oral hygiene 72, 108, 112, 125, 176, 211
- orthophosphoric acid 36
- overjets 182
- palatal approach 131, 131
- palatal arch 37, 65, 187, 190
- palatal displacement 88-96
- palatal impaction
- canines 86
 - classification 112-47
 - complications 96-100
 - diagnosis 100-1
 - heredity 95-6
 - prevalence 85-6
 - treatment 110-12, 110, 111, 112
 - treatment timing 101-9
- palatal mucosa 32-3
- palatal root displacement 119, 125
- palpation 59-60, 100-1
- patients
- adults
 - diagnosis 178-80
 - management 180-1
 - temporary prostheses 181-7
 - appearance 10-11, 62-3, 202, 211
 - children
 - diagnosis 8
 - orthodontic separators 166
 - surgical intervention 9
 - traumatic injury 55-9, 68-70
 - dental age 1-6, 2, 4
 - history 59
 - motivation 10-11
 - psychological well-being 209, 210
- permanent teeth, late-developing 6
- pigtail ligatures 47-8, 214-15
- premolars
- development 5, 6, 7
 - extraction 102, 105
 - impacted 20
 - mandibular
 - abnormal orientation 157-9, 158, 159
 - crowding 157
 - eruption 157
 - late-developing 160
 - maxillary 161, 162, 163, 164-5
 - root development 4
 - movement 135
 - preventive treatment 102-5
- prosthetics
- cleidocranial dysplasia 203
 - temporary 181-7, 190
- psychological well-being 209, 210
- pulp necrosis 81, 97
- radicular cysts see dentigerous cysts
- radiography
- canines 19, 101
 - central incisors 60-1

- cont'd
- cephalometric 20, 20, 21, 22
 - cleidocranial dysplasia 200, 201
 - crown resorption 169
 - deciduous teeth 8, 9
 - extra-oral 17
 - mandibular arches 14, 14
 - mandibular canines 154
 - maxillary canines 21
 - maxillary first molars 165
 - maxillary second premolars 161
 - occlusal 14-16, 14, 15
 - odontomes 60
 - parallax method 17-22, 18
 - periapical 8, 13-14, 16
 - root resorption 140
 - views at right-angles 18-22, 19, 20, 21, 22
 - replacement resorption 81, 98, 169
 - see also ankylosis
 - resorption
 - see also ankylosis
 - crown 33, 98, 98, 169-72
 - incisors 98-100, 99, 141, 142-8
 - replacement 81, 98, 169
 - root
 - axial orientation 220, 222
 - development 4-5, 10
 - arrested 58
 - canines 4
 - dental age 2, 3-5, 3
 - impacted central incisors 55, 56, 58, 72-6
 - dilaceration 73
 - displacement 119, 125
 - Hertwig's sheath 57, 58, 58
 - non-resorption 90, 91, 114-15
 - orientation, correction 75
 - resorption
 - central incisors 98-100, 99, 141, 142-3, 144-5, 146
 - lateral incisors 141, 147-8
 - palatally impacted canines 140
 - rotation 118, 120, 125
 - secondary intention, healing 9
 - separators, orthodontic 166
 - Siamese brackets 46, 167
 - slingshot elastic 49, 116, 118
 - soft tissue 28, 55, 72
 - soldered palatal arches 182, 183, 184-6
 - space closure 153
 - space opening 105, 107, 110, 110
 - spongiosum 207
 - stainless steel ligatures 47-8
 - supernumerary teeth 7, 53-5, 202, 207
 - supplemental teeth 199
 - surgery
 - attachment bonding 36-40
 - cleidocranial dysplasia 203-9
 - dentigerous cysts 174, 176
 - eruptions 26-8, 27
 - exposure 27-8, 27, 28, 38
 - group 1 canines 117
 - group 2 canines 119-20
 - group 3 canines 128-34
 - group 4 canines 134
 - group 5 canines 135
 - impacted teeth 8-10, 25, 30-5, 41
 - mandibular canines 154
 - mandibular second premolars 157
 - soft tissue lesions 28
 - timing 9-10, 207-8
 - surgical flaps
 - apical repositioning 30, 31, 109, 128
 - closure 31-3, 35, 47
 - third molars 193, 196
 - threaded pins 45-6, 45
 - Tip-Edge technique 111-12
 - tooth buds 54-6
 - tooth development
 - canines 86-8, 87
 - dental age 1-6, 33
 - dental follicle 33
 - dilaceration 55-7
 - tooth germ displacement 95, 96, 96, 97
 - tooth position, parallax method 17-22, 17, 18
 - Toronto-Melbourne approach 204-5
 - traction
 - attachment bonding 40
 - buccal, group 3 canines 128, 132-3
 - dental follicle 33-5
 - direct versus two-stage 131
 - elastic 193-6
 - mechanotherapy 109
 - orthodontic 33-5, 40
 - trans-palatal bars 186-7, 188-9
 - transplantation 203
 - transposition 138-9, 138, 156, 190
 - trauma
 - canines 72-72
 - central incisors 55-9
 - children 55-9, 68-70
 - intrusive luxation 58-9, 76-82, 77-80
 - soft tissue 55
 - treatment
 - see also appliances
 - Angle's Class II malocclusion 44
 - attachments 44
 - attitudes to 61-3, 108, 141, 181
 - bands, orthodontic 46
 - brackets, orthodontic 46-7, 46
 - buttonholing 32, 32
 - duration 43-4
 - elastic ligature 48-9, 48
 - enucleation 174
 - eyelets 47-8, 47
 - impacted incisors 63-71
 - lasso wires 45, 45
 - ligatures
 - elastic 48-9, 48, 49, 72
 - gold chain 47
 - pigtail 47-8, 214-15
 - slingshot elastic 49, 116, 118
 - stainless steel 47-8
 - magnets 50, 50
 - preventive 102-5
 - threaded pins 45-6, 45
 - timing 61, 101-9
 - true (vertex) occlusal 15, 15
 - tunnel approach 128, 130
 - well-being, psychological 209, 210
 - Whitehead's varnish 9, 25, 159

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The Orthodontic Treatment of Impacted Teeth

Impacted teeth have provided an ongoing challenge to the dental profession, and many of its specialties have offered treatment modalities in widely differing styles. In the long-term, it has come to be recognized that superior results are obtainable by the orthodontic/surgical modality. There is, however, a considerable difference of opinion between these two specialties as to which procedures should be carried out first and to what lengths each should be pursued.

This text proposes ways in which difficulties posed by impactions may be overcome with an integrated orthodontic/surgical strategy. It emphasizes the importance of determining an appropriate directional traction force and presents ways of effecting this with the use of different types of orthodontic auxiliaries. The relationship between these factors and a favourable prognosis of the completed treatment result is stressed.

A range of issues affecting impacted teeth, including an extensive review of their diagnostic and management procedures, and aetiology is presented.

Contents • General principles • Radiographic methods • Surgical exposure • Treatment strategy • Maxillary central incisors • Palatally impacted canines • Other single teeth • Impacted teeth in the adult • Cleidocranial dysplasia

With over 400 colour and black-and-white photographs

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