

Paediatric Dentistry 2

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EXAM-DAY SUMMARY

everything on this page → detail in §§ overleaf

LATE MIXED DENTITION → §1

- Normal: ugly duckling corrects; skeletal + dental CI I; canines erupt in position
- Abnormal: **infra-occluded primary molars** · **ectopic canines** · **poor-prognosis FPM**
- Ectopic canine → localise by parallax → ortho traction

INFRA-OCCLUSION → §1.1

- = failure to maintain position vs adjacent teeth; ankylosis / exfoliation imbalance
- **Radiograph decides**: successor present + not ectopic → follow up (self-corrects)
- Present + ectopic → extract + ortho traction of successor
- Absent → surgical extraction (ankylosed); refer

FPM — THE GOAL → §2

- Interceptive FPM XLA aims at eruption of SPM (+ TPM if present) and 2nd premolars
- With **space closure** · **no tipping** · **no over-eruption of opposing molar**
- 6 factors: symptoms · prognosis · patient capacity · services · occlusion · family values

FPM — DO NOT APPLY IF → §2.1

- **SPM already erupted** — an SPM in occlusion will not migrate mesially
- No recent DPT (SPM position/development, TPM present or not)
- Acute pain/swelling/infection and the FPM cannot be temporised

FPM — TIMING → §2.2

- Classic: at **SPM bifurcation formation**; window 8–10 y
- Newer predictors: SPM mesio-distal angulation + TPM presence (esp. lower arch)
- Upper: SPM drifts mesially to the 2nd premolar; crowding/CI II → temporise FPM till SPM erupts

BALANCING VS COMPENSATING → §2.3

- Compensating = opposing quadrant · balancing = opposite side, same arch
- **Neither is routine (2023)**
- Compensate only if clear occlusal need / upper FPM unopposed for long
- Balance only within a comprehensive ortho plan

FPM NUMBERS → §2.4

- Erupts 6–7 y · crown complete by 3 y · roots complete 9–10 y
- TPM visible on radiograph usually by **8 y** (very variable)
- ~1 in 3 UK 15-year-olds: caries into dentine in ≥1 permanent tooth

ECC → §3

- = nursing/bottle caries; sugary milk, bottle in mouth overnight
- **Upper anteriors first; lower arch spared** (tongue + suckling)
- Manage: records + photos · medical history · refer · adult toothpaste · F supplement
- Temporary fillings till stabilised; final direct restorations only under GA

PREFABRICATED METAL CROWNS → §4

- Most durable primary-tooth restoration; nickel chromium, not steel
- Better **5-year survival** than multi-surface amalgam
- Use if ≥2 y of tooth life expected; also temporarily on permanent molars
- Technique: 1 mm occlusal reduction · bulbosities · cement Zn polycarboxylate / GIC

HALL TECHNIQUE → §4.2

- No LA · no prep · no caries removal — child bites the cement-filled crown down
- Peri-coronal seal arrests demineralisation till exfoliation
- **Contraindicated if pulpitis**

SPACE MAINTAINERS → §5

- Early loss → drift both sides · opposing extrusion · ↓ arch length & circumference · midline shift · OB/OJ change
- Band & loop = unilateral; **no function, no anti-extrusion**; anterior abutment exfoliates → lingual arch
- Nance = bilateral upper loss (+ resists molar rotation) · TPA = one side only, less effective
- Distal shoe = E lost before the 6 erupts; **X** poor OH, **X** medically compromised (endocarditis)

CHILD MANAGEMENT → §6

- Non-pharmacological (behaviour) vs pharmacological (sedation, GA)
- Factors: age · maturity · personality · parents · past dental/medical experience · staff · environment
- **Tell-Show-Do** · enhancing control · modelling · shaping + positive reinforcement · distraction · desensitisation

§1 Late mixed dentition — what is normal, what is not

KEY POINTS

Late mixed dentition = ugly duckling self-corrects · skeletal + dental Class I · canines erupt into position. Three things derail it: **infra-occluded primary molars** · **ectopic canines** · **poor-prognosis first permanent molars (FPM)**.

Table 1 — Late mixed dentition: expected vs abnormal findings

Normal findings	Abnormal findings
Correction of the ugly duckling stage	Infra-occluded (submerged) primary molars
Normal skeletal and dental Class I	Ectopic eruption of canines
Eruption of canines in position	FPM of poor prognosis

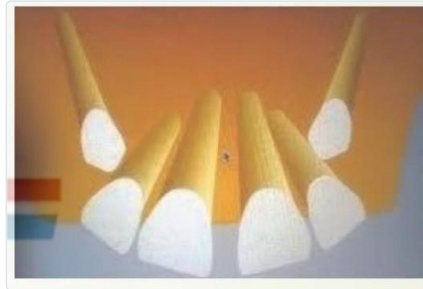


Fig. 1 — Ugly duckling stage: distally flared incisor crowns, midline diastema → self-corrects as the canines erupt and their crowns push the roots mesially.

- **Ectopic canines:** localise position by **parallax** → then **orthodontic traction**
 - late mixed dentition = the window to intercept, before the canine is hopelessly displaced

★ EXAM PEARL

Parallax = two radiographs with a **tube shift**; the object that moves **with** the tube lies **palatally** (SLOB: Same Lingual, Opposite Buccal). Classic single-best-answer on canine localisation.

1.1 Infra-occluded primary molars

- **Definition:** primary molar has **failed to maintain its position relative to adjacent teeth** → appears submerged as neighbours continue to erupt
- **Cause:** **ankylosis**, or an imbalance in the normal resorption/exfoliation process
- **First step:** ★**radiograph** → is the successor present, and is it ectopic?



Fig. 2 — Infra-occluded primary molar: occlusal surface below the plane of the adjacent teeth.



Fig. 3 — DPT is the decision-maker: successor present or absent, and its position.

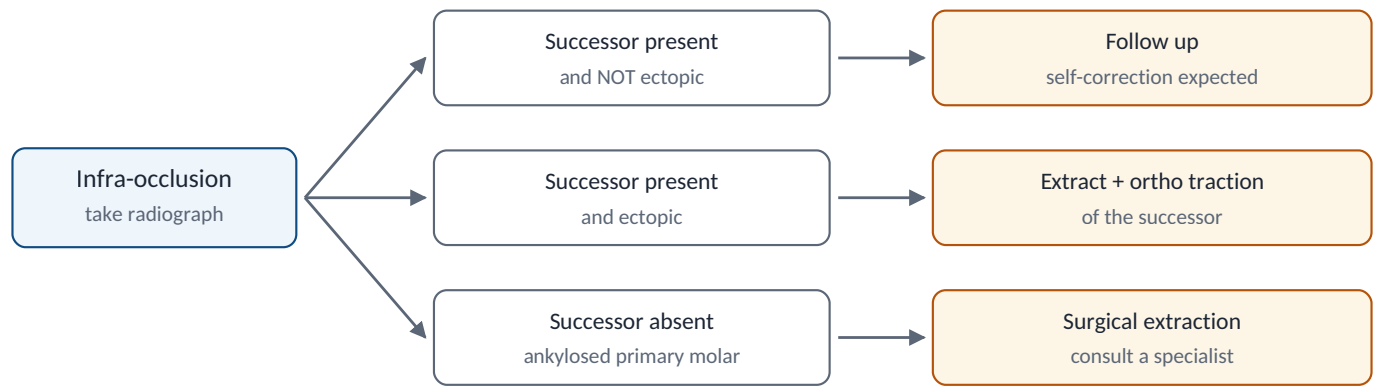


Diagram 1 — Infra-occluded primary molar: the radiograph splits management three ways.

§2 The compromised first permanent molar (FPM)

KEY POINTS

Goal of interceptive FPM extraction: successful eruption of the second permanent molar (SPM) — and the third permanent molar (TPM) if present, to complete the molar dentition — plus the second premolars, with **space closure, no tooth tipping, no over-eruption of the opposing molar unit.**

2.1 Factors to consider before deciding

1. **Symptoms:** immediate clinical symptoms related to the compromised FPM(s)
2. **Prognosis:** accurate diagnosis of the affected tooth/teeth + appraisal of likely future symptoms
3. **Patient capacity:** ability to receive complex care — surgical · restorative · orthodontic
4. **Services:** availability (and location, cost, burden of accessing them)
5. **Occlusion:** the overall occlusion or malocclusion
6. **Values:** aspirations of child *and* parent re immediate care vs burden of future care

CAUTION

Do NOT apply the guideline if: ① the **SPM is already erupted** — an SPM in occlusion will not migrate mesially, so there is no interceptive advantage · ② no access to a **recent DPT** to assess SPM development/position and presence or absence of TPMs · ③ **acute symptoms** (pain, swelling, infection) and the FPM cannot be temporised.

2.2 Ideal timing of extraction

- **Classic rule:** extract at ★**formation of the SPM bifurcation** on radiograph → SPM then takes the place of the extracted FPM. Still correct.
- **Newer predictors:** **mesio-distal angulation of the SPM + presence of the TPM** → favourable SPM eruption, especially in the **lower arch**
- **Upper arch:** SPM can be expected to **drift mesially** into contact with the second premolar
- **Upper arch, space needed:** arch crowding or Class II incisor relationship → **temporise the compromised FPM** until the SPM erupts, then corrective orthodontics
 - the slide reads "temporization of the extracted FPM" — the sense is: restore/stabilise and *delay* the extraction, so the space is not lost before it can be used

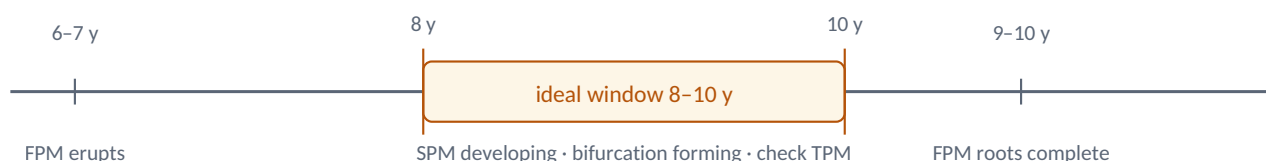


Diagram 2 — Timing. Too early (<8 y) or too late (during SPM eruption) → the SPM and second premolar drift, tip, rotate and leave spacing with poor contacts.

2.3 Balancing and compensating extractions

Table 2 — Balancing vs compensating extraction

	Compensating	Balancing
What	Remove FPM from the opposing quadrant	Remove FPM from the opposite side of the same arch
Classic rationale	Prevent over-eruption of an unopposed upper FPM, which would block desirable mesial movement of the erupting lower SPM	Preserve arch symmetry / dental centreline
Current evidence	Risk of upper FPM over-eruption after lower FPM extraction is small	Dental centreline in either arch is unlikely to be affected
Recommendation	Not routine — only if clear occlusal requirement, or the upper FPM will be unopposed for a significant period	Not routine — only as part of a comprehensive orthodontic treatment plan

★ EXAM PEARL

Compensating = **opposing arch**; balancing = **same arch, other side**. Both are ★**no longer routine** in the 2023 guidance — an easy mark, and an easy one to lose by reciting the old "always balance and compensate" teaching.

2.4 Guideline detail beyond the slides (RCS FDS, March 2023 — supplied with the deck)

- **FPM development:** from primary dental lamina by week 17 in utero · hard tissue at birth · crown complete by 3 y · erupts 6–7 y · roots complete 9–10 y
 - coronal mineralisation spans birth → 3 y → susceptible to chronological/systemic enamel defects
- **Why the FPM suffers:** erupts first, sits at the back → inaccessible · ★~1 in 3 UK 15-year-olds have caries into dentine in ≥1 permanent tooth (CDHS 2013)
- **Molar-incisor hypomineralisation (MIH):** demarcated qualitative enamel defects of FPM ± permanent incisors · post-eruptive breakdown → sensitivity, ↑ caries risk, difficult restorations · aetiology poorly understood
- **TPM:** usually visible radiographically by 8 y, but very variable
 - TPM present → expect 2 molars per quadrant → extracting a doubtful FPM is much more acceptable
 - TPM absent → risk of only **one molar unit** in that quadrant → much more detailed joint discussion
- **Upper arch:** unerupted SPM generally reaches a good position · palatal arch on erupted SPMs holds the FPM space · TADs make early upper space loss far less significant
- **Lower arch:** outcomes more variable, timing more critical · space demands often lower
- **Process:** DPT mandatory · joint paediatric + orthodontic planning = gold standard · developmental age ≠ chronological age · shared decision-making and capacity documented · interceptive extraction is **dynamic** — **needs review, never a one-off**

§3 Early childhood caries (ECC)

- **Also called:** nursing bottle caries · bottle mouth caries
- **Pattern:** bottle feeding with **sugar-containing milk**, especially the child who ★**sleeps with the bottle in the mouth overnight**
- **Distribution:** **upper anterior region** first → may extend to molars
- **Lower arch spared:** tongue + suckling action protect it



Fig. 4 — ECC: gross destruction of the upper primary incisors with the lower incisors intact — the signature distribution.

★ EXAM PEARL

ECC vs **rampant caries**: rampant caries is rapid, widespread caries affecting surfaces usually immune — **including the lower anteriors**. ECC spares the lower arch. If the lower incisors are carious, stop calling it bottle caries.

3.1 Management of ECC

- **Records first**: examination with good records including **photographs** · full medical history survey
- **Refer**: to a paediatric dentistry specialist
- **Prevention**: upgrade to **adult-formula toothpaste** · consider fluoride supplement
- **Stabilise**: **temporary fillings** until the case is stabilised
 - direct final restorations only under ★ **general anaesthesia**

§4 Prefabricated metal crowns (PMC)

KEY POINTS

The **most durable restoration for primary teeth**. Traditionally called "stainless steel crowns" — actually **nickel chromium**. Better 5-year survival than conventional multi-surface amalgam.



Fig. 5 — PMCs on all four lower primary molars.

- **Indications**: badly broken primary molars · severe tooth loss from **bruxism / erosion** · developmental anomalies
 - protection of restorations whenever ★ **≥ 2 years** of remaining lifespan of the primary tooth is expected
 - temporarily in **permanent** molars until the age for definitive permanent crowns
- **Disadvantages**: poor aesthetics · plaque accumulation at the margins
 - because there is **no preparation and no finish line** — the margin sits on unprepared tooth

4.1 Conventional technique

1. **LA and isolation**
2. **Select suitable size**
3. **Caries removal**
4. **Occlusal reduction**: ★ **1 mm**
5. **Bulbosities**: remove buccal + lingual, only enough to seat the crown
6. **Proximal contacts**: open with a tapered diamond stone
7. **Check**: height and occlusion → any further adjustments
8. **Fit**: crown must be **snug** before cementation
9. **Cement**: **zinc polycarboxylate or GIC**

4.2 Hall technique

- **Setting**: poor and marginalised areas, large numbers of children with carious primary molars
- **Absolute condition**: caries that does **NOT** involve pulpitis
- **Method**: no conventional preparation, no caries removal — only loose debris and soft caries removed · **no LA** · child instructed to "gently bite" the cement-filled crown into place · clear away excess cement
- **Mechanism**: **peri-coronal seal** → arrests demineralisation → protects the primary tooth until exfoliation

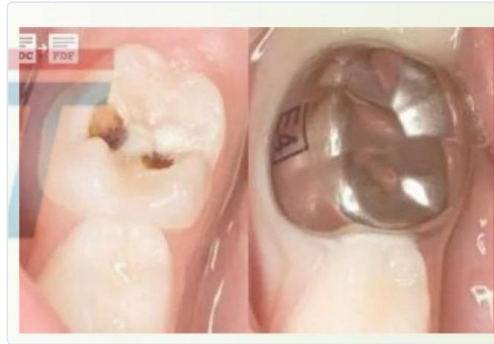


Fig. 6 — Hall technique: the carious molar (left) and the crown seated over it, unprepared (right).

Table 3 — Conventional PMC vs Hall technique

	Conventional	Hall
Local anaesthetic	Yes	No
Caries removal	Complete	None (loose debris + soft caries only)
Preparation	1 mm occlusal · bulbosities · proximal slices	None
Seating	Crown fitted, checked, cemented	Child bites the cement-filled crown down
Pulpitis present	Manage the pulp first	Contraindicated

★ EXAM PEARL

The Hall technique's whole logic is **sealing, not removing** — caries is left *in situ* and starved. The exam trap is the exclusion: ★ **any sign of pulpitis rules it out.**

§5 Space maintenance

5.1 Why: consequences of premature primary tooth loss

- **Drift:** teeth **mesial and distal** to the space drift into it
- **Extrusion:** of the opposing tooth
- **Relationships:** molar and canine relationships significantly affected
- **Space:** loss of **arch length and arch circumference**
- **Midline:** possible shift towards the affected side
- **Vertical/sagittal:** change in overbite and overjet

5.2 Aims and limitations

- **Aims:** restore function · restore aesthetics · prevent extrusion · prevent tongue habit and speech problems
- **Properties (as given):** not affected by exfoliation · need cooperation · **not indicated with high caries activity**

★ EXAM PEARL

Read that last line with care. Standard teaching: **fixed** maintainers remove the cooperation requirement, **removable** ones depend on it; and any appliance anchored to a *primary* abutment **is** affected by exfoliation — which is exactly why a band and loop must be swapped for a lingual arch when the anterior abutment exfoliates. High caries activity contraindicates all of them (bands and solder are plaque traps).

5.3 The appliances

Table 4 — Space maintainers at a glance

Appliance	Indication	Notes
Band and loop	Unilateral loss of one primary molar	Crown & loop if the abutment is badly destructed. Does not restore function; does not prevent extrusion of the opposing tooth. If the tooth anterior to the space exfoliates → replace with a lingual arch.
Lingual arch	Lower arch; bilateral / continuing need	Bilateral bands + loop on the lingual aspect of the lower anteriors. Prevents mesial drift of both teeth posterior to the edentulous area. Maintains space throughout the mixed dentition.
Nance appliance	Bilateral or multiple premature loss of upper posteriors	Space maintenance plus resistance to maxillary molar rotation. Acrylic button on the anterior palate.
Trans-palatal arch (TPA)	Upper posteriors missing on one side , intact arch on the other	Less effective than the Nance.
Distal shoe	Second primary molar (E) lost before the 6 has erupted on that side	Guides eruption of the 6 and prevents its mesial migration. Contraindications below.



Fig. 7 — Band and loop: band on the abutment, loop resting against the tooth across the space.



Fig. 8 — Lingual arch: bilateral bands joined by a wire lying against the lower anterior teeth.



Fig. 9 — Nance appliance: acrylic button on the anterior palate resists mesial and rotational molar movement.



Fig. 10 — Trans-palatal arch: wire across the palate between molar bands — no acrylic, less effective than Nance.



Fig. 11 — Distal shoe: the intra-alveolar extension (A, B) sits against the mesial surface of the unerupted 6 (C, D) and guides it into position.

CAUTION

Distal shoe — **contraindications:** hopelessly decayed abutment · poor oral hygiene · medically compromised patient — the intra-alveolar (invasive) extension carries a risk of **bacterial endocarditis**.

§6 Child management

- **Two routes:** **non-pharmacological** = behaviour management · **pharmacological** = sedation and general anaesthesia

6.1 Factors affecting child behaviour and attitude

- **The child:** age · maturity · personality
- **The parents:** their attitude
- **History:** previous dental **and medical** experience
- **The team:** attitude of the dental staff
- **The setting:** environment in which treatment is given

6.2 Behaviour management techniques

- **Tell–Show–Do:** explain in age-appropriate words → demonstrate → perform
- **Enhancing control:** give the child a stop signal / agency over pace
- **Modelling:** observing a cooperative peer or sibling
- **Behaviour shaping + positive reinforcement:** reward successive approximations of the wanted behaviour
- **Distraction**
- **Desensitisation:** graded exposure → building trust

★ EXAM PEARL

★ **Tell–Show–Do** is the default first-line technique and the one they name in single-best-answers. Sedation and GA are an **escalation after** behaviour management has been attempted — not a substitute for it.