The Eruption of Permanent Teeth

1. What is meant by the term "eruption of teeth"?

- Teeth are formed in the jawbone, and must grow through the bone and covering gum into the mouth.
- This process is called eruption.

Eruption
Tooth cutting through

Growth after eruption

2. What is happening in the jawbone underneath the baby tooth?

- The permanent tooth begins to grow under the baby tooth.
  - The root of the baby tooth begins to dissolve (resorb), and the baby tooth becomes loose.
  - It takes three and a half years for the baby tooth to lose its roots, and for it to be replaced by the permanent tooth.
  - The crown of the permanent tooth is the first part of the tooth to develop.
  - It grows into the space left by the root of the baby tooth.
  - The root of the permanent tooth then continues to form.
  - When the crown erupts, it is covered by a cuticle or covering that protects the enamel. The cuticle is slowly worn away by chewing and toothbrushing.

Permanent tooth under baby tooth

3. What is the replacement process of the baby teeth?
What is the mixed dentition stage?

- The permanent teeth start erupting from the age of 6, and by the age of 13, all the baby teeth have been replaced.
  - During these 7 years, 20 baby teeth are lost and are replaced by 28 permanent teeth.

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- The mixed dentition stage is the period when some baby and permanent teeth are visible in the mouth at the same time.
- In addition, 4 wisdom teeth will erupt by the age of 21 years, taking the total number of permanent teeth to 32.
- The eruption of the 32 permanent teeth starts at age 6, and is completed between the ages of 20 and 23, after the wisdom teeth (3rd molars) have arrived.

Tooth growth and replacement

4. How can 32 permanent teeth fit into the jaw space for 20 baby teeth?

- The bones of the face grow during the period of tooth development.
  - The jawbone normally grows in size to accommodate the extra teeth.
  - The jaws grow at a faster rate than the rest of the face, and eventually measure up to 1/3 of the size of the face. This is a dramatic increase from the proportion at birth.
  - If the jaws do not grow sufficiently, crowding or impacted teeth will result.

5. What is meant by crowding of teeth?

- Crowding is the bunching together of teeth outside their normal alignment, causing them to be irregular or crooked.
- This can affect the front or back teeth.
- Crowding can spoil facial appearance and the smile.

Crowding of teeth

6. What causes crowding of teeth?

- A mismatch of tooth and jaw size can mean that the teeth are too big for the available space.
- If a baby tooth is lost too early, before the permanent replacement tooth is ready to take its place, an open space is left.
- An adjacent tooth can drift into that space, and cause an obstruction in the path of the erupting permanent tooth. It will then be forced to grow and remain outside of its normal position.
- The development of extra (supernumerary) teeth, in addition to the normal number, can also cause crowding.

7. Can crowding of teeth be prevented?

- Crowding takes place when there is not sufficient space for the teeth. Since the premature loss of baby teeth results in crowding, it is important for the baby teeth to remain in position until the permanent teeth replace them.
- Here are some preventive measures and considerations relating to crowding:

    - A regular routine of tooth cleaning, together with a low sugar diet will help to keep the baby teeth healthy, until they are ready to be replaced.
    - Regular visits to the dentist from the age of 2 or 3 will ensure that problems are detected and treated in time.
    - If a baby tooth is lost before the permanent tooth is ready to replace it, a space maintainer can keep the space open for the permanent tooth.

8. How can crowding of teeth be corrected?

- Extraction of teeth can open up the spaces needed for the remaining teeth to be moved into.
- Orthodontic treatment can correct most crowding problems.

9. What influences the final positioning of erupting teeth?

- The final position of a tooth is determined by an interplay of the tongue, lips and cheeks.

    - The tongue exerts an outward pressure on the teeth.
    - The lips and cheeks provide a balancing inward force.
    - Teeth are prevented from growing longer by their contact with teeth in the opposite jaw.

- Other influences are thumb-sucking and tongue-thrusting:

    - The outward pressure of a thumb-sucking habit pushes the upper front teeth and jaw forward and out of alignment.
    - The strong forward thrust of the tongue can force teeth out of position. This happens when an adult continues the swallowing patterns of babyhood.

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10. The Eruption Chart for Permanent Teeth

Upper Teeth

TOOTH	DENTAL NAME	ERUPTION AGE	ROOT FULLY FORMED
1	CENTRAL INCISOR	7-8 YEARS	10-11 YEARS
2	LATERAL INCISOR	8-9 YEARS	11-12 YEARS
3	CANINE	11-12 YEARS	14-15 YEARS
4	FIRST PREMOLAR	10-11 YEARS	13-14 YEARS
5	SECOND PREMOLAR	11-12 YEARS	13-15 YEARS
6	FIRST MOLAR	5-7 YEARS	8-10 YEARS
7	SECOND MOLAR	12-13 YEARS	15-16 YEARS
8	THIRD MOLAR	17-21 YEARS	19-23 YEARS

Lower Teeth

TOOTH	DENTAL NAME	ERUPTION AGE	ROOT FULLY FORMED
1	CENTRAL INCISOR	6-7 YEARS	9-10 YEARS
2	LATERAL INCISOR	7-8 YEARS	10-11 YEARS
3	CANINE	9-10 YEARS	12-13 YEARS
4	FIRST PREMOLAR	10-12 YEARS	13-15 YEARS
5	SECOND PREMOLAR	11-12 YEARS	14-15 YEARS
6	FIRST MOLAR	5-7 YEARS	8-10 YEARS
7	SECOND MOLAR	11-13 YEARS	14-16 YEARS
8	THIRD MOLAR	17-21 YEARS	19-23 YEARS

TOOTH GROWTH IS NOT COMPLETE UNTIL THE ROOT IS FULLY FORMED

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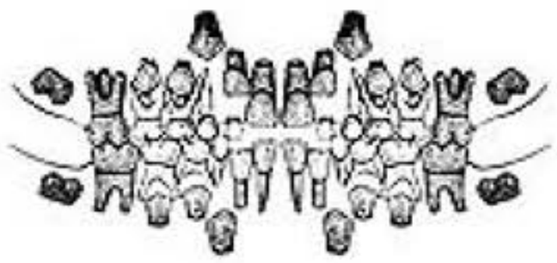
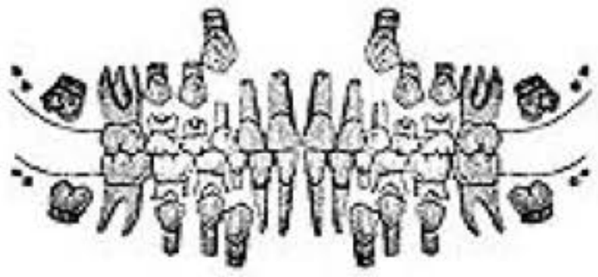
11. The Calendar of Tooth Growth and Development

- The calendar shows the stages of development of baby and permanent teeth from the age of seven to twenty one years.
- The permanent teeth are made to appear darker than the baby teeth.
- The growth patterns are clearly shown. The crowns of teeth are the first to form, followed by the roots.
- The growth and replacement of teeth is well illustrated. The mixed dentition stage reveals the way baby teeth make space for the permanent teeth to grow into.

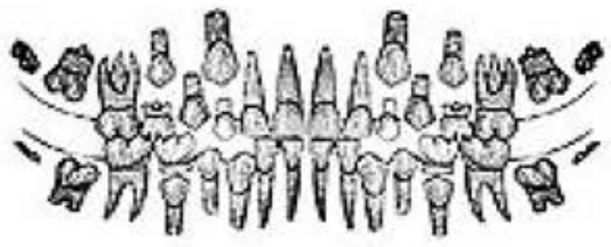


7 Years

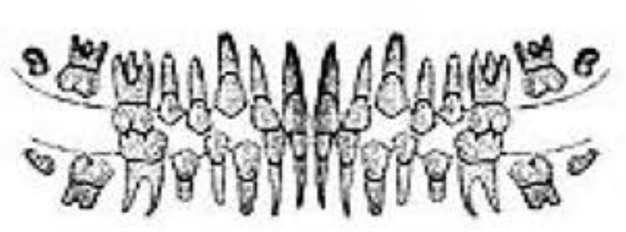
8 Years



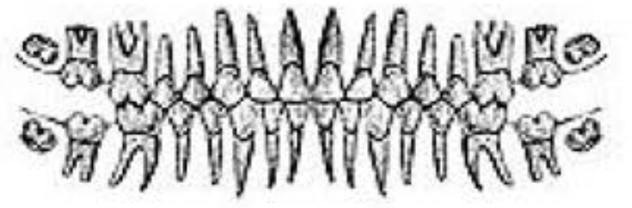
9 Years



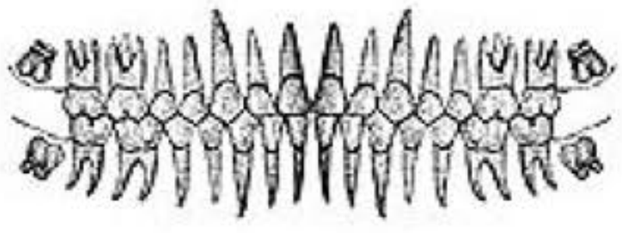
10 Years



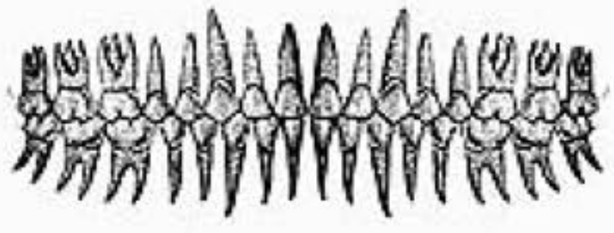
11 Years



12 Years



15 Years



21 Years