

# Deciduous teeth eruption in full and mosaic type of Down's Syndrome patient

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## ABSTRACT

The purpose of this study was to examine the correlation of deciduous teeth eruption with the karyotype of Down's Syndrome patient. Full and Mosaic karyotype in Down's Syndrome (DS) patients have different prognostics. A total of 33 DS patients constituted of 23 full and 10 mosaics were enrolled in this cross sectional study. The Chi-square statistical test was utilized to analyze the data. The result revealed that a full trisomy DS patients had their deciduous teeth erupted in 13-18 months old while a mosaic DS patients in 8-12 months old. The conclusion affirmed that the deciduous teeth eruption in mosaic DS patients is earlier than full DS patients ( $p = 0.002$ ).

**Key words:** Down's Syndrome, mosaic, full, karyotype, deciduous teeth, eruption

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## INTRODUCTION

The terminology Down's Syndrome was named after a British physician, Langdon Down who in 1866<sup>1,2</sup> described patient's clinical features of the syndrome. The trisomy 21 Down's Syndrome was initially called Mongolism, but many people thought that it was too racialistic. The term Down's Syndrome is more often used among researchers, it is known as Down's Syndrome (DS).<sup>1,2,3</sup>

Down's Syndrome (DS) incidence is quite high. In mothers under 30 years old, the incidence is one in every 1500 birth and the incidence increase to one every 65 birth if the mothers older than 45 years old. The incidence of Down's Syndrome tends to increase along with mother's age.<sup>1,2</sup> The older the mothers, the higher the risk to have a Down's Syndrome child.

Down's Syndrome is a syndrome caused by an extra chromosome in chromosome 21. The etiology of DS is a non-disjunction during meiosis resulting in one extra chromosome in chromosome 21. Important factors influencing the non-disjunction process is mother's age during pregnancy and labor. The incidence of DS increase in the mothers older than 35 years of age during labor.<sup>1-4</sup>

Down's Syndrome (DS) clinical features are low birth weight, short, microcephaly, flat head, flat face, low set ear, straight soft hair, up slanting eyes, syndactyly and clinodactyly on metacarpal and phalanges, simian crease with a sandal gap between the first and second toes.<sup>1,4-6</sup>

The prominent features are macroglossia, fissured and geographic tongue, high palatum and hypotonia. Several missing teeth, delayed deciduous teeth eruption and

exfoliation are also observed. The teeth are smaller and conus. The hypotonia causes stick-out tongue, opened-mouth and drooling.

Down's Syndrome (DS) patients have delayed body and dental growth and development. Their deciduous and permanent teeth have delay eruption, and dental anomaly in) structure and morphology e.g. hypoplatia, conus.

A normal person has 46 chromosomes 23 pairs consisted of 22 pairs autosomal chromosome and 1 pair of sex-chromosome in each body cell. Every pair of autosomal chromosome is numbered from one to twenty-two. According to its etiology, DS is divided into 3 types, i.e.: mosaic, full and translocated.

Down's Syndrome (DS) or Trisomy 21 is an anomaly caused by chromosome's disturbance with varied clinical manifestations. The majority shows a full trisomy (full karyotype) which demonstrates an extra chromosome in chromosome 21, with 47 chromosomes in every cell. The mosaic type DS has normal chromosomes (46) in several cells, thus it shows lighter physical characteristics and a better mental condition. While the full type DS shows more severe clinical features. The mosaic type has two cell populations in his body, some cells contain normal chromosome complements with 2 chromosome 21, whereas other cells have 3 chromosome 21 (a joint cell with chromosome 46 and 47).<sup>6</sup> The mosaic DS is a type with a variation of DS and normal condition. Whenever there is only few amount of cells undertake trisomy, the clinical signs are very difficult to find, thus it is hard to diagnose DS. The bigger the cell proportion with normal chromosome, the higher possibility of normal appearance.<sup>2</sup>

The possibility of mosaic occurrence is due to a deviation of the 2<sup>nd</sup> and the 3<sup>rd</sup> zygote meiosis, resulting in 46 chromosomes and 47 chromosomes with an extra chromosome in chromosome 21. The purpose of this study was to *examined* the correlation of deciduous teeth eruption with the karyotype of Down's Syndrome patient mosaic and full type.

#### MATERIALS AND METHOD

The study was a cross-sectional research. The subject was patients with pediatrician's diagnosed DS, in range of age between 7 to 18 months. The DS was confirmed based on clinical and chromosome examinations. Karyotyping was used to analyze the chromosome, and trisomy 21 defined if an extra chromosome in chromosome 21 was found. The mosaic DS type was determined if there are more than 40% normal cell (cell with 46 chromosomes), while the full DS type was determined if the number of normal cells are less than 40%. The deciduous teeth eruption was defined if the white sign appear in the oral mucosa and the number of erupted deciduous teeth. Chi-square was used to analyze the data.

#### RESULTS

**Table 1.** The duration of healing RAS' ulcer in the female students with and without history of CP

Trisomy	N	Deciduous teeth eruption time (month)	
		8-12 month	13-18 month
Mosaic	10	10	-
Full	23	12	11

Chi square  $p = 0.002$

Table 1 showed the deciduous eruption time of the samples. Eleven out of 23 full type patients, had teeth eruption between 13 to 18 months old ( $p = 0.002$ ). The results showed that the full type DS had a delayed deciduous teeth eruption, while the mosaic type showed the eruption of deciduous teeth occurred in the age of 8 to 12 months.

#### DISCUSSION

Normally, deciduous teeth eruption begins from the mandibular central incisor at the age of 4–6 months.<sup>7,8</sup> Delay of deciduous teeth eruption is often found in DS patients. The DS patients showed a disturbance in eruption

and [the] eruption order. The first erupted teeth is mandibular central incisor and the latest eruption is second primary molar. The primary central incisor in trisomy 21 erupted in 12 to 13 months of age. It could erupted in 24 months old, with (the completion of primary tooth eruption) in 4 to 5 years of age.<sup>5</sup>

Many DS patients had no teeth until the age of 2 years old.<sup>7</sup> Primary teeth eruption is influenced by gene and the environment. The presence of three chromosome 21 can caused the disturbance of growth and development in children, including dental growth and development in particularly the primary teeth eruption.<sup>6,7</sup>

The mosaic type has a combination of normal karyotypes and DS karyotypes. The mosaic DS has many normal cells (46 chromosomes) than the full type (47 chromosomes). It explained why the DS mosaic type has lighter physical signs than the full type. The same experience happened in deciduous teeth eruption. This research revealed that the primary teeth in mosaic DS erupted earlier than the full DS type. There was a significant difference between the primary teeth eruption of the full type DS than the mosaic type.) The finding was in accordance with the statement that heavier physical evidences in full type DS<sup>1,2</sup> due to the presence of more abnormal cells 47 chromosomes. The delayed eruption of deciduous teeth correlated with a delayed development in DS patients, including delayed physical and mental development.<sup>4-6,9</sup>

The conclusion are the deciduous teeth eruption of full type DS was more delayed than of the mosaic type DS. The eruption in the full type DS occurred in 13 months of age and in the mosaic type occurred less than 11 months of age.

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