

INCIDENCE OF IMPACTED CANINES IN HYPOTHYROID PATIENTS

Running title : Incidence of impacted canines in hypothyroid patients

Type of study : Retrospective study

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ABSTRACT :

BACKGROUND : Impaction of maxillary and mandibular canines is a commonest problem, the treatment of which usually requires mostly an interdisciplinary approach. The orthodontic treatment of impacted maxillary and mandibular canine remains a challenge to the dentists especially orthodontists. The treatment of this clinical entity usually involves surgical exposure of the impacted tooth, followed by orthodontic traction to guide and align it into the dental arch.

AIM: The aim of the study is to identify the incidence of impacted canine in hypothyroid patients.

MATERIALS AND METHODS : A retrospective study was conducted on out patients of saveetha dental college to determine the above mentioned aim. In the study, recorded case sheets were collected and inspected for impacted canine in hypothyroid patients. The data was analysed using SPSS software, Descriptive statistics and chi-square test. The results were collected and plotted as graphs.

RESULTS AND CONCLUSION : The study concluded that the subclinical endocrinopathies like hypothyroidism in both the adults and children may lead to teeth impaction that lead to orthodontic malocclusion. It can be later corrected by surgical and orthodontic management widely.

KEYWORDS : Innovative ,Hypothyroid, Impacted canine, Prevalence

INTRODUCTION :

The orthodontic treatment of impacted maxillary and mandibular canine remains a challenge to the dentists especially orthodontists. The treatment of this clinical entity usually involves surgical exposure of the impacted tooth, followed by orthodontic traction to guide and align it into the dental arch. Most of the complication of canine impaction includes bone loss, root resorption, and gingival recession around the treated teeth (1). Hypothyroidism is a clinical disorder which is commonly encountered by the physician. Untreated hypothyroidism can lead to some problems hypertension, dyslipidemia, infertility, cognitive impairment, and neuromuscular dysfunction. Autoimmune thyroid disease is considered as the most common cause of hypothyroidism in the United States. Clinical symptoms of hypothyroidism are nonspecific and may be subtle, especially in older aged persons (2).

Possible causes for impaction may include one or more of the following local factors and systemic conditions like inadequate space for eruption or early loss of primary canines; abnormal position of the tooth bud; the presence of an alveolar cleft, a cystic lesion, or neoplasm; ankylosis; dilacerations of the root; an iatrogenic or idiopathic cause; endocrine deficiencies; malnutrition; fever; or irradiation. Palatal canine impaction is genetic in origin, whereas labial impaction is due to inadequate arch space (3). Surgical techniques for the management of impacted canines vary depending on whether the impactions are palatal or labial, and orthodontic techniques vary according to clinical

judgment and experience. The permanent maxillary canine is second only to the mandibular third molar in the frequency of impaction and is considered to be the most frequently impacted tooth in childhood (4). In Medicine, Thyroid hormones are commonly used to accelerate the antidepressant effect of tricyclic antidepressants and selective serotonin reuptake inhibitors that often take 2 to 3 weeks to produce a noticeable psychiatric effect (5).

The management of impacted canines can be divided into 2 types namely interceptive and corrective. In interceptive orthodontics, extraction of the primary canine is thought to sequential alignment of the impacted canine. Modifications includes addition to the extraction of primary canines include the use of cervical pull headgear, double extraction of the primary canine and the primary first molar, the use of a transpalatal arch (TPA), and TPA in combination with rapid palatal expansion (6). There are various local and systemic factors which can alter the rate of eruptive tooth movement, such as ankylosis, cleidocranial dysostosis, achondroplastic dwarfism, thyroid disease, pituitary disturbance, and disorders in growth hormone. Some previous study concluded that the conduction of 20 µg/kg T4 can reduce bone density that, in turn, accelerates orthodontic tooth movement while force-induced root resorption is reduced. It appears that T4 administration increased the rate of alveolar bone remodeling, thereby indirectly augmenting orthodontic tooth movement and decreasing force-induced root resorption (7). Our team has extensive knowledge and research experience that has translate into high quality publications(8),(9),(10),(11),(12–21) (22),(23–25).(26,27). Our team has also developed innovative means of orthodontically extruding impacted canines.

MATERIALS AND METHODS :

The study was done in a private dental college and hospitals, Chennai India. Ethical approval was obtained from the institutional review board prior to the start of study.

The patient records were reviewed and the data of patients between september 2020 to February 2021 was analysed. Data was collected from a total sample of 56 patients who reported with impacted canine. Data was collected with parameters like age, gender and data of hypothyroidism with impacted canine. The source of data was collected using DIAS software in Saveetha dental college and hospitals, chennai. Collected data were analysed using SPSS statistics software and done using chi-square tests. P value was set as 0.05 as the level of significance.

RESULTS :

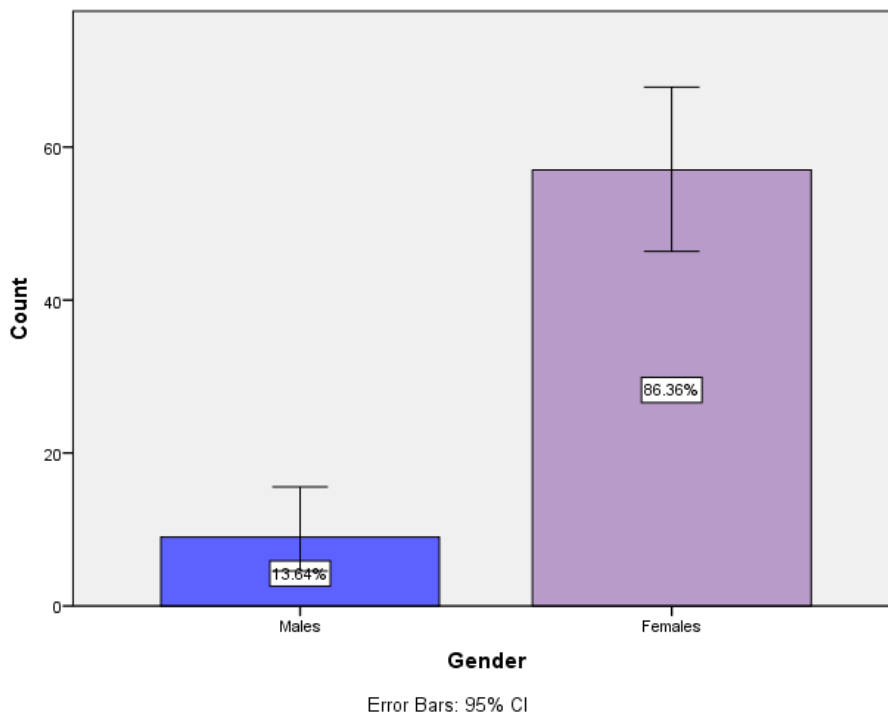


Fig 1 Bar graph shows the gender of the participants. It shows that 13.64% participants were male (Blue) and 86.36% were females (Purple).

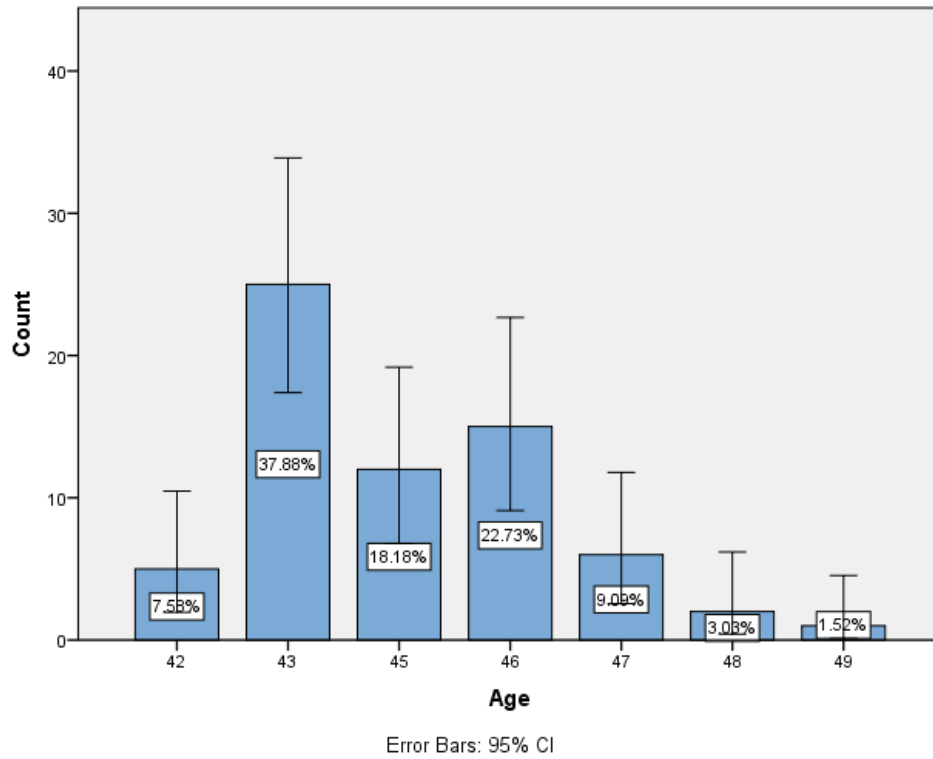


Fig 2 Bar graph shows the age of the participants. About 7.58% of them belongs to the age group of 18-20 years, 37.88% of them belongs to the age group of 20-30 years, 18.18% of them belongs to the age group of 30-35 years, 22.73% of them belongs to the age group of 35-40 years, 9.09% of them belongs to the age group of 41-50 years, 3.03% of them belongs to the age group of 51-60 years and 1.52% of them belongs to the age group of 61-80 years.

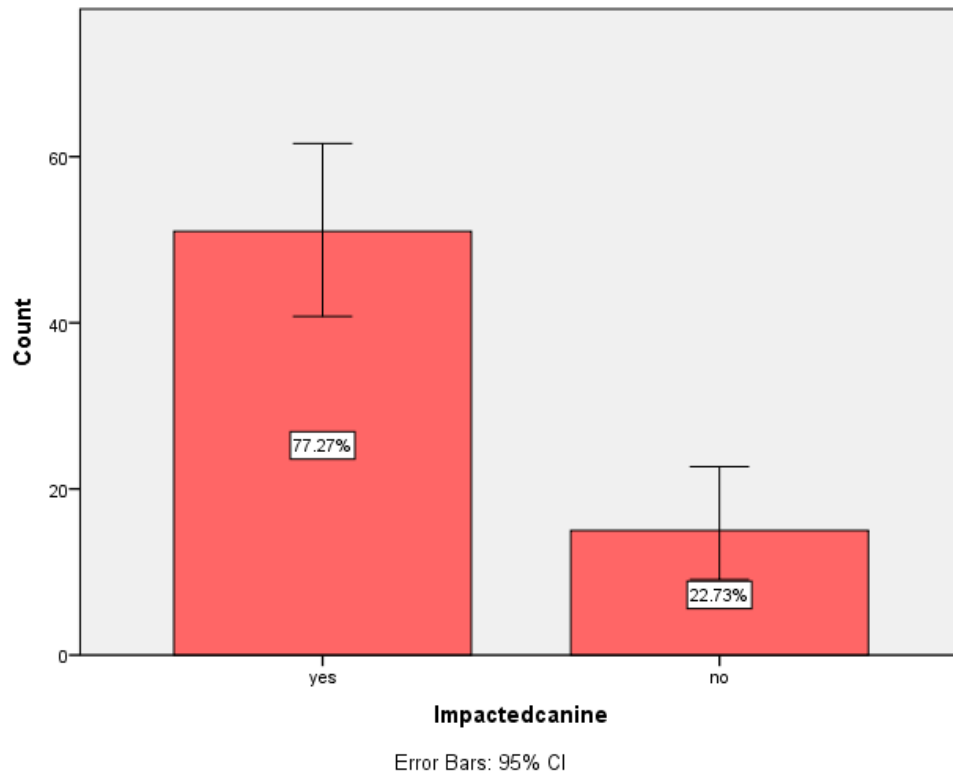


Fig 3 Bar graph shows the presence of impacted canine with hypothyroid patients. 77.27% of the patients were identified to have impacted canine with hypothyroidism among the selected population and 22.73% of the hypothyroid patients were not identified with impacted canines.

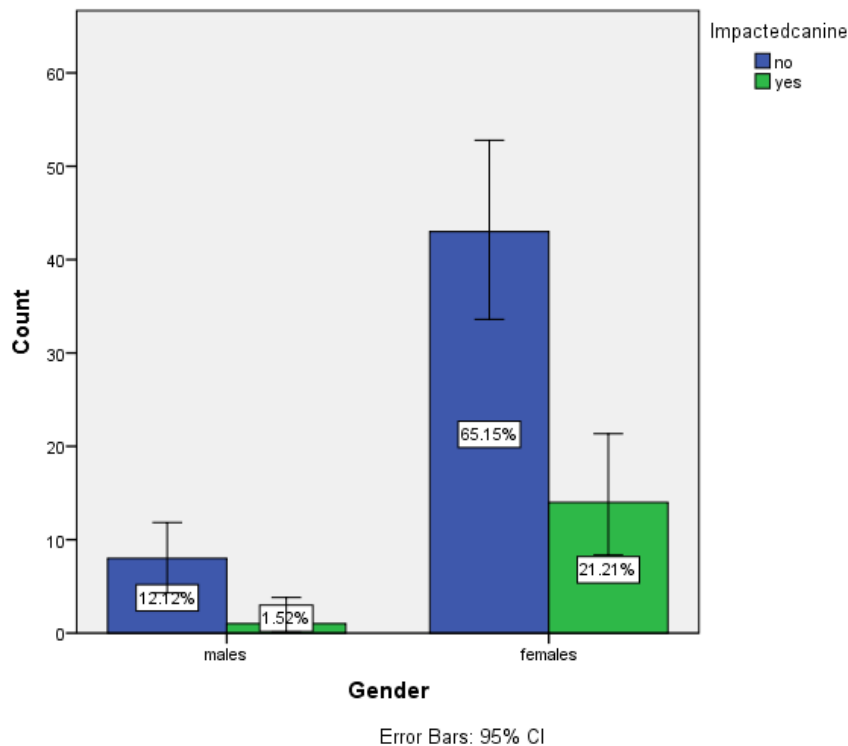


Fig 4 Bar graph shows the correlation between the gender of the participants and the presence of impacted canine in hypothyroid patients. About 12.12% of males and 65.15% of females were not identified with impacted canine. About 1.52% of males and 21.21% of females were identified with impacted canines.

DISCUSSION :

Canine impaction is considered as a common occurrence, and clinicians must have to be prepared to manage it. With some of the early detection, timely interception, and well-managed surgical and orthodontic treatment, impacted maxillary and mandibular canines can be erupted and guided to an appropriate location in the dental arch (28). Bone resorption activity is mostly regulated by L-thyroxine, in addition to PTH. The administration of high doses of T4 in rats led to increase in bone resorption, whereas low dose administration led to reduction in periosteal resorption. Sudden acceleration of orthodontic tooth movement at some incidence can coincide with the hyperthyroid period. It was a clinical case that showed a possible relationship between the serum level of thyroid hormone and the rate of orthodontic tooth movement (29).

Previous study stated that about 500 consecutive opg radiographs were reviewed. This study explains mainly about canine impaction and transmigration among the patient population. The incidence of canine impaction was found to be 3.58% and the incidence of canine transmigration was 0.31%. The incidence of impacted canine teeth and transmigration of maxillary and mandibular canines may be more frequent in at least certain populations (30). Another study depicts that maxillary canine impaction was not related to absence of the lateral incisors. Absence of both mandibular central incisors was a high predictor for oligodontia. Hence it is concluded that congenital heart disease and hypothyroidism are parameters involved in tooth agenesis (31). The dental practitioner can have a specific part in the diagnosis of subclinical endocrinopathies such as hypothyroidism in both the adults and children. An adult patient was reported with a history of hypothyroidism who had orthodontic treatment to correct the malocclusion that was caused mainly due to acquired hypothyroidism. Extensive orthodontic treatments under normal conditions is quite difficult due to lack of growth, lack of cooperation and slow response of tissues (32).

Hence diagnosing certain conditions in dental practice is a very interesting and difficult part in the field of dentistry. The study concluded that the subclinical endocrinopathies like hypothyroidism in both the adults and children may lead to teeth impaction that lead to orthodontic malocclusion. It can be later corrected by surgical and orthodontic management widely. The aim of this study is to identify the incidence of impacted canine in hypothyroid patients.

CONCLUSION :

The study concluded that the subclinical endocrinopathies like hypothyroidism in both the adults and children may lead to teeth impaction that lead to orthodontic malocclusion. It can be later corrected by surgical and orthodontic management widely.

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CONFLICT OF INTEREST :

The authors declare that there is no potential conflict of interest.

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