



ISSN NO. 2320-5407

Journal Homepage: -www.journalijar.com
**INTERNATIONAL JOURNAL OF
 ADVANCED RESEARCH (IJAR)**

Article DOI:10.21474/IJAR01/2221
 DOI URL: <http://dx.doi.org/10.21474/IJAR01/2221>



INTERNATIONAL JOURNAL OF
 ADVANCED RESEARCH (IJAR)
 ISSN 2320-5407
 Journal homepage: <http://www.journalijar.com>
 Journal DOI:10.21474/IJAR01

RESEARCH ARTICLE

SUPERNUMERARY TEETH-REVIEW OF AETIOLOGY, SEQUELAE, DIAGNOSIS AND MANAGEMENT. PART II.

Dr Khaled Khalaf

PhD, BDS, DAS (Orth.), FDS (Orth) RCS (Eng), FFDRCSI (Orth.), M Orth RCS (Eng), M Orth RCS (Edin), MFDSRCS (Eng), MFDSRCS (Edin), MFDSRCPS (Glasg), FHEA
 Department of Orthodontics, College of Dentistry, King Faisal University, KSA.

Manuscript Info

Manuscript History

Received: 28 September 2016
 Final Accepted: 30 October 2016
 Published: November 2016

Key words:-

supernumerary teeth, aetiology, sequelae, diagnosis, management.

Abstract

The mechanism by which supernumerary teeth arise is not yet known, and there may be different aetiological explanations for different types of supernumeraries. Many theories have been suggested to explain how this anomaly occurs in the dentition. With difficulties in obtaining sufficient embryological evidence on supernumerary teeth development, any theory concerning their formation remains hypothetical. Abnormalities in dentition can be caused by supernumerary teeth. Anterior supernumerary teeth can cause more serious problems than posterior supernumeraries, wherein the most frequent complaint is one of aesthetics. The most common sequelae of supernumerary teeth are displacement of teeth of the normal series, crowding and rotation of the normal teeth in the affected region, development of an abnormal median diastema, interference with occlusal development or orthodontic mechanics during orthodontic treatment, delay or failure of eruption of associated permanent teeth and gemination or fusion. Early diagnosis and detection of supernumerary teeth is crucial to avoid or minimize such complications including both clinical and radiographic examination. There are two choices of treatment of supernumerary teeth namely removal or maintenance of the supernumerary tooth, with periodic follow-up. The treatment of choice will depend on several factors such as associated pathology and/or abnormality, age of the patient and degree of dental development of the neighbouring permanent teeth, and location and type of the supernumerary tooth.

Copy Right, IJAR, 2016., All rights reserved.

Main text:-

Aetiology of supernumerary teeth:-

The mechanism by which supernumerary teeth arise is not yet known, and there may be different aetiological explanations for different types of supernumeraries. Many theories have been suggested to explain how this anomaly

Corresponding Author:-Dr Khaled Khalaf.

Address:-Department of Orthodontics, College of Dentistry, King Faisal University, KSA.

occurs in the dentition. With difficulties in obtaining sufficient embryological evidence on supernumerary teeth development, any theory concerning their formation remains hypothetical.

Atavism:-

This evolutionary theory has been suggested on the basis of remote ancestors of man having forty-four teeth (the dental formula of the typical mammalian dentition being $(3\ 4\ 1\ 3\ | \ 3\ 1\ 4\ 3)$) and during the evolutionary process twelve teeth have been lost in recent man. Thus, on the view of the atavistic theory the incidence of supernumerary teeth represents a reversion to the dentition of ancestral creatures and recurrence of forms of teeth which have become extinct. This aetiological explanation for the occurrence of supernumerary teeth has been adopted by some authors.^{1,2} This theory has been disproved by the absence of the supernumerary cuspid in the mammalian dentition and the fact that supernumerary teeth are also found in the deciduous dentition. In addition, malformed supernumerary teeth cannot be accounted for by atavism.

Aberrations during embryological formation:-

Embryological formation is a long process during which the maxillofacial complex undergoes different stages of development to give rise to the normal facial and dental characteristics. However, a disruption might occur in one or more of these stages throughout embryological formation, giving rise to one or more developmental anomalies, including supernumerary teeth. Different theories have been suggested to explain the development of supernumerary teeth with the developmental process as a possible cause. These include:

Excessive growth of the dental lamina:-

Hyperactivity of the dental lamina is the most common proposed theory for aetiology of supernumerary teeth.³⁻⁸ The factors which are involved in inciting such hyperactivity are essentially unknown. Tensions within the jaws, as well as the mobility of particular facial processes, may cause division of the dental lamina.⁸ Local influences such as inflammation, scarring, abnormal pressure and disturbed relationships between cells may cause this dental hyperplasia.⁹ An interaction between developing tooth germs may influence the occurrence of supernumerary teeth. For example, in some mice the first molar tooth germ is smaller than a certain threshold size, at a critical time, which seems to allow a proliferation of the dental lamina to develop into a supernumerary tooth.¹⁰

The excessive growth of the dental lamina occurs in different sites, giving rise to different types of supernumerary teeth which differ from each other according to their proximity to the normal tooth buds. It has been suggested that additional buds are more likely to occur in the broad spaces between normal tooth buds.^{11,12}

Some types of supernumerary teeth such as supernumerary premolars, which are considered to be members of a 'post-permanent' dentition, have been suggested to occur as accessory buds from the dental lamina on the lingual aspect.² This has been supported with the observation that these teeth were mostly found late in development, and either lie impacted below the roots of the erupted normal premolars which were usually in good alignment, or erupt lingual to them.

Stafne¹³ advocated Black's theory that the ameloblasts control the formation of the dentine germ and subsequently the enamel organ. According to this theory, a supernumerary tooth could be produced as a result of an occasional accessory proliferation of the dental lamina. This is usually of similar shape of the neighbouring teeth.

Gardiner³ has reviewed in detail the aetiology of supernumerary teeth. He favoured the theory that suggests distomolars are derived from additional budding of the distal extension of the dental lamina at its end, which has also been proposed by Gorlin and Goldman.¹⁴ Further support to this theory has been made by Fisher.¹⁵ He reported a bilateral existence of six maxillary impacted supernumerary molars which, after surgical extraction, proved to be of recognizable morphology and occurred at the end of the normal series.

Foster and Taylor¹⁶ proposed that conical mesiodens develops from an offshoot of the dental lamina. Almeida et al.¹⁷ stated that the wide variation found in the morphology of mesiodentes could be more logically explained by their origin from the hyperactivity of the dental lamina.

Proliferation of remnants of the dental lamina:-

At the final stages of the development of the tooth germ, most of the epithelial cells of the dental lamina break up and disappear. Some of these cells however remain and form groups (pearls or islands), called "gland of Serres", that may develop into a tooth germ of a supernumerary tooth, as a result of an unknown stimulating mechanism.^{3,6}

Stafne¹³ stated that the remnants of the epithelial cord may become active and produce extra teeth that are more likely to be of conical shape. Histological studies on animals (rats and mice) showed that epithelial remnants proliferating in the interseptal areas, and originating primarily from Hertwig's sheath, may be transformed into differentiating cells when stimulated by trauma.¹⁸⁻²² Ranta and Ylipaavalniemi²³ reported two cases of initiation of the formation of supernumerary mandibular premolars shortly after the occurrence of jaw fractures, suggesting therefore that traumatic injury of the jaws may be considered as a cause of supernumerary tooth formation.

Dichotomy of the tooth germ:-

Occurrence of supernumerary teeth has been ascribed to a dichotomy of tooth buds.^{3,24} This theory of the origin of supernumerary teeth has gained some credibility from Berkovitz and Thomson's study²⁵ which involved observations on the aetiology of supernumerary upper incisors in the albino ferret. Further support for this theory came from clinical findings that supernumerary teeth were more likely to occur in cases that had supernumeraries in the primary dentition.²⁵⁻²⁸ Depending on this interpretation, a tooth germ may divide, forming another germ.^{5,29} Such splitting could result from some external interference not directly related to the process of tooth formation itself.^{30,31} This division may be equal, resulting in a supplemental supernumerary tooth,³² or unequal resulting in a malformed supernumerary. The latter may explain the formation of the conical type of supernumerary tooth.⁴ Almeida¹⁷ favoured the dichotomy hypothesis for the supplemental premolars. However, Shafer et al.⁷ did not favour the possibility of the splitting tooth bud as the origin of a supernumerary tooth, arguing that in most cases, associated permanent teeth are normal in all respects.

If a supernumerary tooth is the result of the splitting of a tooth germ, we would expect the developmental stage of this supernumerary tooth to be approximately the same as that of the normal tooth which the supernumerary tooth is thought to have originated from. This appears not to be the case in many instances. For example, it has been found that there is an orderly variety of different stages of dental development of the supernumerary teeth found in the premolar region compared to the erupted premolars, from the enamel cap through to a fully developing supernumerary tooth.³³ Thus, late developing supernumeraries, occasionally found in the premolar region, cannot be accounted for by dichotomy of the tooth bud phenomenon. So, it may be that different supernumeraries have different aetiologies even for those teeth which have been found in the same region.

Heredity:-

Genetic factors were considered to be important in the aetiology of supernumerary teeth.^{7,13,34,35} In a survey of 200 patients with supernumerary teeth, Stafne¹³ found that there was a definite genetic involvement in 90 percent of his cases.

A familial disposition has been demonstrated in ten out of twenty-three cases.³⁶ In a more extensive familial study, Brook³⁷ reported that supernumerary teeth were present more frequently in the first-degree relatives of affected children than in the general population, suggesting a significant genetic component in the aetiology. Full responsibility of genetic factors for the occurrence of supernumerary teeth has been concluded by Foster³⁸ excluding any effect of environmental variables.

A number of cases of familial occurrence and case reports of twins and siblings with supernumerary teeth have been reported³⁹⁻⁴³ providing more support to the genetic involvement in the aetiology. According to this theory, supernumerary teeth result from mutant genes. This is supported by the observation of a greater frequency of supernumerary teeth found in association with facial and dental anomalies such as cleidocranial dysostosis,⁴⁴⁻⁴⁷ cleft lip or cleft palate,⁴⁸ Fabry's disease,⁴⁹ and Gardine's syndrome.⁵⁰ The bilateral presence of supernumerary teeth suggests that they may be controlled by a mutant gene.⁵¹ The occurrence of supernumerary teeth in most cases as an isolated dental finding was thought to be attributed to multi-genetic aetiology.⁵² The possibility of an autosomal dominant inheritance with a lack of penetration has also been proposed,^{29,53,54} although this is yet to be substantiated. The possibility of a sex-linked mode of inheritance has been referred to, because there is a greater frequency of supernumerary teeth in males than in females.⁵⁵

From the information available it seems that supernumerary teeth have strong genetic evidence for their aetiology, but do not appear to follow a simple Mendelian pattern. On the other hand, environmental factors may also have an effect.

Progress zone:-

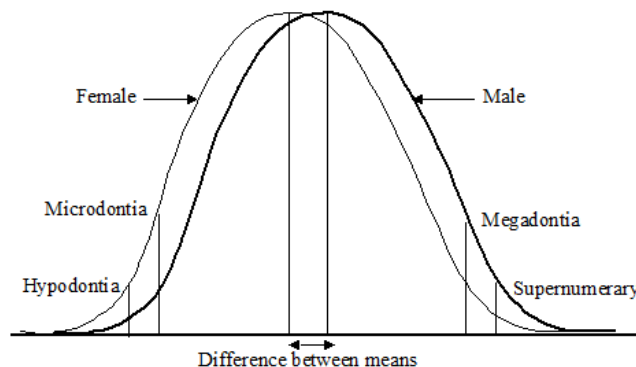
The progress zone theory, supplemented by a model, suggests that supernumerary teeth result from the hypermitotic potential of the elongating ends (progress zones) of the dental lamina in every tooth series or class.⁵⁶⁻⁵⁸ Thus, depending on this explanation of the origin of supernumerary teeth we would expect that the supernumerary teeth to occur as extra structures at the ends of incisor, canine or molar tooth classes. According to Lumsden “gradation in shape and size in the individually sequentially initiated elements of a series are expression of intrinsic time-dependent alterations in the growing cell population which form them”. In an attempt to explain the shape of mammalian teeth, Osborn⁵⁶ in his model suggested that tooth class (i.e. incisor, canine and molar) results from cellular proliferation anteriorly and posteriorly from an original stem cell mass or stem progenitor. He has proposed that gradients in shape and size are attributable to the cell ancestry of the primordial tissue. Primordia that forms later develops from cells that have undergone more divisions than those that develop earlier. He suggested that gradients in tooth shape can be ascribed to a gradient in initial growth rates of successive primordia, which results from a decrease in growth rate of a clone of cells as it grows posteriorly. Hence, depending on this model the determination of tooth shape and size is intrinsic to a tooth class. This is contrary to that which has been proposed by Butler’s Field Theory⁵⁹ which suggests that an extrinsic source, a morphogenetic gradient, determines the size and shape of teeth. Schwartz⁵⁸ found that the occurrence of supernumerary teeth could be explained by either a progress zone or an interstitial budding model of tooth differentiation. Thus, evolutionary changes in tooth number could be interpreted by differences in potential within the context of normal development and the regulation of development, rather than the results of major developmental revolutions. It appears that the development of supernumerary molars may be clarified depending on this theory.

Unified aetiologic explanation:-

A unified aetiology for anomalies of tooth number and size has been proposed.³⁷ This is based on a multifactorial model that has a continuous scale, with thresholds related to tooth number and size. The position of any of the dental anomalies on this scale is determined by a combination of both genetic and environmental factors. This single model has explained the frequency, aetiology and associations of four dental anomalies (microdontia, hypodontia, megadontia and supernumerary teeth).

The model (see Figure 2.1) accounts for the sex differences in tooth size, the higher prevalence of hypodontia and microdontia in females, and the higher prevalence of supernumerary teeth and megadontia in males. It considers effects on the whole dentition, as this appears to behave as a single developmental system. This is in accordance with the finding stated by Bailit⁶⁰ that when a third molar is congenitally absent, the permanent dentition is 13 times more likely to have hypodontia than the population prevalence. Similarly, others have shown that hypodontia of the third molars is associated with a higher incidence of hypodontia of the other teeth and delay eruption of the second molars.⁶¹⁻⁶³ This model, which includes anomalies of tooth number and size, is based on experimental results and explains the presence of supernumerary teeth as well as other anomalies.

Figure 1:- A unified aetiology for anomalies of tooth number and size Brook (1984), with an underlying scale of continuous variation for tooth number and size.



Sequelae and consequences of supernumerary teeth:-

Abnormalities in dentition can be caused by supernumerary teeth. Anterior supernumerary teeth can cause more serious problems than posterior supernumeraries, wherein the most frequent complaint is one of aesthetics. Certain effects on the dentition can be attributed to specific types of supernumeraries. The most common sequelae of supernumerary teeth are listed below.

Malocclusion:-

Malocclusion has been reported as a common finding in cases with supernumerary teeth.⁶⁴⁻⁶⁷ Such teeth in the anterior region have a greater effect on the occlusion than those of the premolar and molar regions, because premolar and molar supernumeraries usually develop after most permanent teeth have erupted, and many of these unerupted supernumeraries are discovered as an incidental finding on routine radiographic examination.⁴³

Displacement of teeth of the normal series:-

Supernumerary teeth may cause different degrees of displacement of adjacent teeth.⁶⁸ The most frequent supernumerary tooth to do so is the mesiodens. Indeed, this is the most common clinical complication encountered in orthodontics.

Macphee,⁶⁹ in his study of the incidence of erupted supernumerary teeth in 4,000 school children, found 5 cases (0.125%) with malposition of the teeth that could be directly attributed to the presence of supernumerary teeth. Out of 100 non-cleft palate supernumerary tooth patients treated at the Sheffield Dental Hospital, 42 patients were found to have bodily displacement of the normal teeth.³ The explanation of this condition is that a supernumerary tooth developing adjacent to the crown of the normal permanent tooth on the dental lamina or tooth bud, displaced the crown of the normal tooth from its normal path of development. A supernumerary tooth, when erupting buccally, may cause lingual deflection of an incisor, that may then erupt in a rotated or cross-bite relationship.

Crowding and rotation of the normal teeth in the affected region:-

Erupted supplemental teeth are the most frequent supernumerary tooth types to cause crowding of the adjacent teeth. In 100 supernumerary tooth patients in Sheffield who had been examined by Gardiner,³ 21 had supernumerary teeth accompanied with the rotation of the central incisors.

Development of an abnormal median diastema:-

Midline supernumerary teeth can result in developing a median diastema.⁷⁰ Thus, a suspicion of the presence of supernumerary teeth should be considered where a marked median diastema or rotations in the premaxilla exist.⁵ Ferguson et al.⁶⁸ investigated the simultaneous occurrence of supernumerary teeth and diastemata. Their survey included full-mouth radiographs of 353 patients aged 16 years or older. They found two supernumerary teeth (an incidence of 0.57%) and 36 diastemata (an incidence of 10.20%), but no associated occurrence of the two conditions was reported in the same patient. This finding is likely to be related to the low number of supernumerary teeth seen. A more suitable approach would be to investigate diastemata in supernumerary teeth patients.

Possible effects during orthodontic treatment:-

Supernumerary premolar teeth tend to commence their development later than teeth of the normal series. Therefore, they might develop during the orthodontic treatment. Progress or end of treatment radiographs may show a developing supernumerary tooth which may not have been present on pre-orthodontic radiographs. These late forming supernumeraries may interfere with occlusal development or orthodontic mechanics, such as space closure (delayed or prevented) and root torque (resulting in resorption of adjacent roots).

Delay or failure of eruption of associated permanent teeth:-

Another common complication that might arise from the presence of extraneous teeth is the delayed eruption or impaction of the other teeth.^{66,71-74} Upper central incisors are the teeth most frequently found to be impacted due to the presence of supernumeraries, particularly those of tuberculate type.⁷⁵

Gardiner³ found that 28 percent of the supernumerary tooth patients in Sheffield were found to have delayed eruption of the upper permanent incisors. Thirty nine percent of 80 consecutive supernumerary tooth cases at the Eastman Dental Hospital, London, have been reported to have a failure of incisor eruption.⁷⁶ A similar proportion (42%) has been recorded by DiBiase.⁷⁷ Howard⁷² reported the delayed eruption of incisors in 60 percent of supernumerary tooth patients. There is an association between a delayed eruption of normal teeth and some supernumerary features like

tuberculate type, odontome, large size, absence of or incomplete root formation and vertical direction.^{5,6,16,72,77-79} Bergstrom⁸⁰ reported 13 impacted permanent teeth in 9 children out of 2,589 school children examined. Eight cases were due to the presence of supernumeraries. Nazifet al.⁶ surveyed 50 cases of patients with impacted supernumerary teeth. They found 30 percent of the sample had impacted eruption of permanent teeth, in particular in the maxillary anterior region.

Delayed eruption of maxillary permanent central incisors due to the presence of supernumerary teeth may result in an arch-length inadequacy because of the mesial movement of the lateral incisors.⁷⁵ In addition, prolonged delayed eruption of the central incisors can cause underdevelopment of the dentoalveolar ridge of these teeth resulting in a complete failure of eruption.

Gemination or fusion:-

The terminology concerning fused teeth is somewhat contradictory and the difficulty of distinguishing between gemination and fusion is evident.⁷ However, most authors agree that “fusion” is a union between normal teeth and “gemination” is a union between a normal tooth and one or more supernumeraries. Geminations occur in two forms, mesially or distally, resulting in displacement of the adjacent teeth and bucco-lingually, resulting in a malocclusion in the opposing jaw.

Gardiner³ reported on 3 out of 100 cases of supernumerary tooth patients with gemination or fusion of permanent teeth. A similar number was found in the permanent teeth of 8,500 schoolchildren examined by Tinn.⁸¹ There is a number of explanations for this condition. A supernumerary tooth may develop on the dental lamina too close to the normal tooth and so may become joined to it, forming partial or complete fusion. The different types of fusion depend upon the stage of tooth formation reached when the two tooth germs (supernumerary and normal tooth) come into contact each other. Sometimes complete fusion occurs without any demarcation and with a common pulp. Taylor⁴ suggested that gemination may arise either as an incomplete dichotomy of a tooth germ or from a fusion of a normal tooth germ with that of a supernumerary or adjacent tooth.

Other consequences:-

Supernumerary teeth may also cause other consequences such as: cystic lesions that may develop around the crowns of the unerupted supernumeraries, similar to unerupted normal teeth,^{13,65,66,82,83} subacute pericoronitis,⁸⁴ gingival inflammation,^{85,86} periodontal abscesses,^{13,87,88} odontomas, ameloblastoma formation in the walls of the follicle⁸⁹ and fistulae. Also, they may cause absorption of the roots of the adjacent permanent teeth⁹⁰⁻⁹² or their own roots when they erupt before the permanent teeth.⁵¹ Interestingly, a dilaceration of the roots of the adjacent teeth has been reported.⁸⁷ The increased incidence of dental caries has even been reported in the adjacent teeth. This is due to the creation of plaque-retaining regions inaccessible to oral hygiene.⁸⁸ Other complications may be seen when supernumerary teeth arise in unusual places such as the nasal cavity. In such cases, symptoms like obstruction, headache, nasal discomfort, rhinitis caseosa, epistaxis and purulent rhinorrhea may be prevented by the surgical removal of intranasal teeth.^{93,94}

Diagnosis of supernumerary teeth;-

Early diagnosis of supernumerary teeth is crucial to avoid or minimize complications that might arise from their presence. Both clinical and radiographic examination is necessary for detecting the presence of any supernumerary teeth.^{6,95} Clinically, a significant delay in the eruption of the permanent teeth (particularly maxillary central incisors) could be an important sign pointing to the suspicion of the existence of one or more unerupted supernumerary teeth.⁹⁶ Often it is noticed that the adjacent teeth are tilted towards the space of the impacted tooth, or if these are highly placed, the neighbouring teeth may close the space by bodily movement. To localize clinically the position of the unerupted buccally positioned supernumerary tooth, palpation of the affected area is an important procedure in determining the location of the unerupted tooth.

Supernumerary teeth in the permanent dentition are more likely to be unerupted; those erupted are much less frequent than those in the primary dentition (25% versus 73%).^{13,36,97,98} Full radiographs are therefore extremely important in diagnosing the majority of permanent supernumeraries. Radiographs can show any supernumerary tooth in the anterior maxillary region from as early as the newborn period to adulthood. In addition, radiographs are essential in confirming the position of the supernumerary tooth and its relation to the neighbouring teeth, and the distance of the unerupted permanent teeth to the occlusal plane. It is important to localize the position of the

impacted supernumerary tooth before surgical removal. The parallax technique is a well known method for this localization, also called the horizontal shift technique.⁹⁹ In this technique, two radiographs of the same object are taken from two different horizontal angles, but at the same vertical dimension. If the impacted tooth is located palatally to the reference tooth, it will move in the same direction as X-ray source, whereas it will move in the opposite direction if it is situated labially.

Management and treatment:-

Undoubtedly many patients who have supernumerary teeth, especially in the anterior region, often seek treatment, because of the abnormality of the appearance of these teeth and their consequences. There are two choices of treatment of impacted supernumerary teeth with some controversy regarding the optimal treatment time and modality.¹⁰⁰

Removal of the supernumerary tooth:-

It is generally recommended that supernumerary teeth are extracted^{13,64-66} and especially so if they are erupted.^{89,101-103} In a situation where the supernumerary tooth causes problems or complications are anticipated, early extraction is recommended. DiBiase¹⁰⁴ advocated monitoring conical teeth because they are more likely to erupt early,¹⁰⁵ but early removal of other forms of supernumeraries, like the tuberculate type which is unlikely to erupt and frequently delays the eruption of the adjacent teeth, is recommended.^{5,75} Munns¹⁰⁶ mentioned that the earlier the removal of a supernumerary tooth causing complications, the better the prognosis. Self-correction of severely rotated and impacted mandibular permanent incisors was attributed to the early removal of the causative supernumerary teeth by Nuvvula et al.¹⁰⁷ Others were unable to show any differences between early and late removal of the supernumeraries in the prognosis of the adjacent permanent teeth.¹⁰⁸ Particular care should be taken however when surgical removal of a supernumerary tooth occurs during the primary dentition period, because of the risk of displacing the permanent tooth during the operation.^{5,98} However, whilst some authors advise immediate removal of supernumerary teeth following the diagnosis of their presence,^{97,109} others advocate to delay their extraction until the root development of the central and lateral incisors has completely occurred, at about the age of eight to ten years.^{5,6,74,97,110,111} Omer et al.,¹¹² However, have reported the optimal age for the surgical removal of the unerupted anterior supernumerary teeth to be from 6.1 to 7.0 years to avoid associated complications. The risks of early removal of unerupted supernumerary teeth must be considered. These mainly include damage to the adjacent teeth (e.g. the loss of vitality) and malformation of the root. In addition, such early surgical intervention could have a deleterious effect on the psychological condition of a young child, thus jeopardizing co-operation with future operative dental treatment.¹⁰⁵

Surgical removal of supernumeraries in the mandibular premolar region may cause serious damage to surrounding structures, including the inferior alveolar and mental nerves, the inferior border of the lower jaw and the roots of the adjacent teeth. In the maxilla complications may include perforation of the maxillary antrum, pterygomaxillary space or orbit. In addition, ankylosis of the adjacent teeth may occur if any damage to the dental follicle or enamel epithelium of the roots of the permanent teeth is sustained during the course of surgical removal. Sometimes, in the absence of any of the sequelae of the existence of the supernumerary teeth or when early surgical removal is risky, late removal can be carried out. In such cases of postponement of the surgical intervention, some undesirable effect might occur, e.g. limited eruptive forces of the adjacent teeth and subsequent mesial movement resulting in loss of the arch space in the anterior region, and a midline shift, and the possibility of the need for extensive surgical/orthodontic treatment.^{5,113,114}

For supplemental supernumerary teeth, it is difficult to distinguish the normal tooth from its supplemental twin. In such cases, if both teeth are equally well formed, the most displaced one should be selected for extraction.

Maintenance of the supernumerary tooth, with a periodic follow-up:-

In cases where a supernumerary tooth could be "useful" for orthodontic reasons, or if it is found in a location where a surgical removal is quite dangerous and the supernumerary tooth does not interfere with eruption or orthodontic movement of the permanent dentition, or is not associated with any abnormality, maintenance of the supernumerary tooth in situ with a regular clinical and radiographic monitoring is advised.^{79,83,115,116} Such monitoring excludes any pathological change that might occur at a later date. In such cases where the teeth remain impacted, they may erupt later and disrupt the occlusion. In addition, cystic lesions or resorption of the adjacent teeth may occur.^{91,92} However, Bodinet al.¹¹⁷ stated that only 2 percent of impacted supernumeraries in the premolar region showed consequences. Thus, they could be left without the risk of the surgery.

Recurrence of supernumerary teeth has been mentioned by some authors.¹¹⁸⁻¹²⁰ Morgan⁶⁶ reported a case in which three supernumerary premolars reappeared five years later after extraction, along with additional teeth of the same type. Poytonet al.¹²¹ reported the re-occurrence of three mandibular supernumerary premolars, two on the left and one on the right, similar to the first set discovered, five years after removal of the first set, along with two left maxillary supernumerary premolars which were not present at the time when the first set of the mandibular supernumeraries were discovered. The mechanism underlying this is unknown.

If there is a need for orthodontic treatment, particular care should be taken in moving any permanent teeth dilacerated by supernumeraries. In mild cases the movement of these teeth can be done, but in severe cases the apical dilacerated portion of the root often resorbs during tooth movement.

Considering the delay or failure of eruption of the maxillary central incisors associated with the presence of supernumeraries, if the patient is young and the primary central incisors are overretained, the primary teeth should be extracted straight away (along with the supernumeraries if they inhibit the development of the permanent adjacent teeth), with a periodic follow up to observe any improvement in the development of the succedaneous teeth. A maxillary removable appliance should be fitted to maintain the space in the incisor region. In most cases (nearly 75%), spontaneous eruption of the impacted teeth will occur following the removal of the supernumeraries.^{36,104,122-124} The time required for these impacted teeth to emerge may vary between sixteen months and three years.^{74,104,106} However, Hattab et al.¹²⁴ stated that spontaneous eruption and alignment of the permanent central incisors occurs within six to eight months following early extraction of the supernumeraries, provided adequate arch-space is available and the impacted tooth is in a favourable (vertical) position. Different factors play a part in this variation reported. These include the type of supernumerary tooth, the position of the impacted teeth and to what extent they are displaced and inclined, the space available within the arch for them to erupt and the time of diagnosis and surgical intervention.^{16,104} Other factors, such as chronological age of the patient as well as status of the root (maturity, inclination and curvature), seem to have little effect.¹⁰⁴ If, after a sufficient time (six months), no appreciable spontaneous eruptive movements of the impacted teeth have occurred (this is more likely to occur if they are close to their normal eruption path), then surgical exposure of the unerupted tooth crown should be undertaken. This will enhance the possibility of spontaneous eruption, in approximately 85 percent of cases.¹²³ Orthodontic traction should be applied if spontaneous eruption does not occur after surgical removal,⁵ to bring the unerupted impacted tooth into proper alignment. One approach is to carry out surgical removal of the supernumerary tooth and exposure of the unerupted tooth at the same time, with or without applying a bonded attachment or ligature for orthodontic traction. The disadvantage of this approach is the difficulty of obtaining a good gingival margin, particularly in relation to the neighbouring teeth. For orthodontic traction, a force of about 1 to 2oz was advised rather than heavy forces for the adequate movement and a good gingival condition.¹¹⁰ Moreover, to have sufficient gingival tissue attachment, an apically repositioned flap is favoured in some cases rather than a window technique for exposing the crown of the impacted tooth.⁵ The orthodontic technique usually involves using an elastic ligature that is placed from an arch wire to a bracket directly bonded to the tooth.

Conclusions:-

1. The mechanism by which supernumerary teeth arise is not yet known. However, many theories have been suggested to explain how this anomaly occurs in the dentition and there may be different aetiological explanations for different types of supernumeraries.
2. Anterior supernumerary teeth can cause more serious problems than posterior supernumeraries. The most common sequelae of supernumerary teeth are displacement of teeth of the normal series, crowding and rotation of the normal teeth in the affected region, development of an abnormal median diastema, interference with occlusal development or orthodontic mechanics during orthodontic treatment, delay or failure of eruption of associated permanent teeth and gemination or fusion.
3. Early diagnosis and detection of supernumerary teeth is crucial to avoid or minimize such complications including both clinical and radiographic examination.
4. There are two choices of treatment of supernumerary teeth namely removal or maintenance of the supernumerary tooth, with a periodic follow-up depending on several factors.

References:-

1. Osburn AS. Original communications on supernumerary teeth in man and other mammals. *Dent Cosmos* 1912;54:1192-1203.
2. Oehlers FAC. Postpermanent premolars. *British Dental Journal* 1952; 93: 157-158.
3. Gardiner JH. Supernumerary teeth. *Dental Practitioner and Dental Record* 1961; 12: 63-73.
4. Taylor GS. Characteristics of supernumerary teeth in the primary and permanent dentition. *Dent Pract Dent Rec* 1972;22(5):203-208.
5. Primosch RE. Anterior supernumerary teeth-assessment and surgical intervention in children, *Paediatric Dentistry* 1981; 3: 204-215.
6. Nazif MM, Ruffalo RC, Zullo T. Impacted supernumerary teeth: a survey of 50 cases. *Journal of the American Dental Association* 1983; 106: 201-204.
7. Shafer WG, Hine MK, Levy BM. A textbook of oral pathology, Fourth ed., Philadelphia: W. B. Saunders Company 1983; pp. 47-50.
8. Knychalska-Karwan Z, Pawlicki R, Jacob-Dolezal K, Karwan T. The mesiodens teeth under an electron scanning microscope and x-ray microanalyzer. *Journal of International Association of Dentistry for Children* 1984;15: 7-13.
9. Foley MF, Del Río CE. Supernumerary teeth. Report of a case. *Oral Surg Oral Med Oral Pathol* 1970;30(1):60-63.
10. Sofaer JA. The genetics and expression of a dental morphological variant in the mouse. *Archives of Oral Biology* 1969; 14: 1213-1223.
11. Fujita K. A review: Abnormality in number of human teeth. *KokubyoZasshi* 1958; 25: 97-106. (in Japanese).
12. Imanishi I. Advanced study on cheilognathoschisis and meloschisis (tabulation of cleft of face). *Hiroshima DaigakuShigakuZasshi-Journal of Hiroshima University Dental Society* 1970; 2 (1): 71-75. (in Japanese).
13. Stafne EC. Supernumerary teeth. *Dental Cosmos* 1932; 74: 653-659.
14. Gorlin RJ and Goldman HM. Thoma's oral pathology. Edition 6, St. Louis, The C. V. Mosby Company 1970; pp. 120.
15. Fisher SE. Maxillary sixth molars. *British Dental Journal* 1982; 152 (10): 356.
16. Foster TD, Taylor GS. Characteristics of supernumerary teeth in the upper central incisor region. *Dental Practitioner and Dental Record*, 1969; 20: 8-12.
17. Almeida JD, Cabral LAG, Gomes APM, Moraes E. Supernumerary mesiodentes with familial character: A clinical report. *Quintessence International* 1995; 26 (5): 343-345.
18. Wentz FM, Weinmann JP, Schour I. Morphology and incidence of epithelial remnants in the molar region of the rat. *Journal of Dental Research*, 1948; 27: 753.
19. Saarenmaa L. The origin of supernumerary teeth. *ActaOdontologicaScandinavica* 1951; 9: 293-303.
20. Slavkin HC, Bavetta LA. Odontogenic epithelial-mesenchymal interactions in vitro. *Journal of Dental Research* 1968; 47: 779-785.
21. Price C, Hoggins GS. A category of supernumerary premolar teeth. *British Dental Journal* 1969; 126: 224-228.
22. Karley MA, Kollar EJ. Supernumerary tooth formation in mouse molar transplants. *Journal of Dental Research* 1977; 56: 1344.
23. Ranta R, Ylipaavalniemi P. Developmental course of supernumerary premolars in childhood: report of two cases. *Journal of Dentistry for Children* 1981; 48 (5): 385-388.
24. Brook AH, Winter GB. Double teeth-a retrospective study of "germinated" and "fused" teeth in children. *British Dental Journal* 1970; 129: 123-130.
25. Berkovitz BKB, Thomson P. Observations on the aetiology of supernumerary upper incisors in the albino ferret (*Mustelaputorius*). *Archives of Oral Biology* 1973; 18: 457-463.
26. Munro D. Supernumerary teeth of the permanent and deciduous dentitions. Two cases. *British Dental Journal* 1952; 93: 321-322.
27. Grahnen H, Granath LE. Numerical variations in primary dentition and their correlation with the permanent dentition. *Odontologisk Revy* 1961; 12: 348-357.
28. Ravn JJ. Aplasia, supernumerary teeth and fused teeth in the primary dentition. An epidemiologic study. *Scandinavian Journal of Dental Research* 1971; 76: 1-6.
29. Sedano HO, Gorlin RJ. Familial occurrence of mesiodens. *Oral Surgery, Oral Medicine and Oral Pathology* 1969; 27: 360-362.
30. Ooe T. Three instances of supernumerary tooth germs observed with serial sections of human foetal jaws. *Zeitschrift fur Anatomie und Entwicklungsgeschichte* 1971; 135 (2): 202-209.

31. Schwartz JH. Dentofacial growth and development in Homo sapiens: evidence from perinatal individuals from Punic Carthage. *AnatomischerAnzeiger* 1982; 152 (1): 1-26.
32. Weber FN. Supernumerary teeth. *Dental Clinics of North America* 1964; 8: 509-517.
33. Kantor ML, Bailey CS, Burkes EJ. Duplication of the premolar dentition. *Oral Surgery, Oral Medicine and Oral Pathology* 1988; 66: 62-64.
34. Kawashima A, Nomura Y, Aoyagi Y, Asada Y. Hereditary may be one of the etiologies of supernumerary teeth. *Ped Dent J* 2006;16:115-7.
35. Anthonappa RP, King NM, Rabie ABM. Aetiology of supernumerary teeth: a literature review. *Eur Arch Paediatr Dent* 2013; 14:279-288.
36. McKibben DR, Brearley LJ. Radiographic determination of the prevalence of selected dental anomalies in children. *Journal of International Association of Dentistry for Children* 1971; 28 (6): 390-398.
37. Brook AH. A unifying aetiological explanation for anomalies of human tooth number and size. *Archives of Oral Biology* 1984; 29: 373-378.
38. Foster TD. A textbook of orthodontics. Oxford, Blackwell Scientific Publications, 1982; pp. 145-149.
39. Mercuri LG, O'Neill R. Multiple impacted and supernumerary teeth in sisters. *Oral Surgery, Oral Medicine and Oral Pathology* 1980; 50 (3): 293.
40. Jasmin JR, Jonesco-Benaiche N, Muller-Giamarchi M. Supernumerary teeth in twins. *Oral Surgery, Oral Medicine and Oral Pathology* 1993; 76 (2): 258-259.
41. Almeida JD, Cabral LAG, Gomes APM, Moraes E. Supernumerary mesiodentes with familial character: A clinical report. *Quintessence International* 1995; 26 (5): 343-345.
42. Mason C, Rule DC. Midline supernumeraries: a family affair. *Dental Update* 1995; 22: 34-35.
43. Scanlan PJ, Hodges SJ. Supernumerary premolar teeth in siblings. *Br J Orthod* 1997; 24(4):297-300.
44. Chipps JE. Multiple supernumerary teeth in cleidocranialdysostosis. *Oral Surgery* 1951; 4 (1): 25-28.
45. Frame K, Evans RI. Progressive development of supernumerary teeth in cleidocranial dysplasia. *British Journal of Orthodontics* 1989; 16: 103-106.
46. Jensen BL, Kreiborg S. Development of the dentition in cleidocranial dysplasia. *Journal of Oral Pathology and Medicine* 1990; 19: 89-93.
47. Richardson A, Deussen FF. Facial and dental anomalies in cleidocranial dysplasia: a study of 17 cases. *International Journal of Paediatric Dentistry* 1994; 4: 225-231.
48. Millhon JA, Stafne EC. Incidence of supernumerary and congenitally missing lateral incisor teeth in 81 cases of harelip and cleft palate. *American Journal of Orthodontics and Oral Surgery* 1941; 37: 599-604.
49. Regattieri LR, Parker JL. Supernumerary teeth associated with Fabry-Anderson's syndrome. *Oral Surgery, Oral Medicine, and Oral Pathology* 1973; 35 (3): 432-433.
50. Fader M, Kline SN, Spatz SS, Zubrow HJ. Gardner's syndrome (intestinal polyposis, osteomas, sebaceous cysts) and a new dental discovery. *Oral Surgery, Oral Medicine and Oral Pathology* 1962; 15 (2): 153-172.
51. Messer JG. Supernumerary molar teeth. *British Dental Journal* 1972; 133: 261-262.
52. Miles AEW. Malformation of teeth. *Proceedings of the Royal Society of Medicine, Section of odontology* 1954; 47: 817-826.
53. Batra P, Duggal R, Parkash H. Non-syndromic multiple supernumerary teeth transmitted as an autosomal dominant trait. *J Oral Pathol Med* 2005;34:621-5.
54. Wang XX, Zhang J, Wei FC. Autosomal dominant inherence of multiple supernumerary teeth. *Int J Oral MaxillofacSurg* 2007;36:756-8.
55. Brunning LJ, Dunlap L, Mergele ME. Report of supernumerary teeth in Houston, Texas schoolchildren. *Journal of Dentistry for Children* 1957; 24: 98-105.
56. Osborn JW. Morphogenetic gradients: fields versus clones. In: *Development, Function and Evolution of teeth*, Butler PM and Joysey KA (eds.), London: Academic Press 1978; pp. 171-199.
57. Lumsden AGS. Pattern formation in the molar dentition of the mouse. *Journal de BiologieBuccale* 1979; 7 (1): 77-103.
58. Schwartz JH. Supernumerary teeth in anthropoid primates and models of tooth development. *Archives of Oral Biology* 1984; 29 (10): 833-842.
59. Butler PM. Studies of the mammalian dentition. Differentiation of the post-canine dentition. *Proceedings of the Zoological Society, London, Series B* 1939; 109: 1-36.
60. Bailit HL. Dental variation among populations. An anthropologic view. *Dental Clinics of North America* 1975; 19: 125-139.
61. Werther R, Rothenberg F. Anodontia. A review of its etiology with presentation of a case. *American Journal of Orthodontics* 1939; 25: 61-81.

62. Grahnen H. Hypodontia in the permanent dentition. A clinical and genetical investigation. *Odontologisk Revy* 1956; 7 (Suppl. 3): 1-100.
63. Garn SM, Lewis AB, Bonn  B. Third molar polymorphism and the timing of tooth formation. *Nature* 1961; 192: 989.
64. Black GV. Supernumerary teeth. *Dental Summaries* 1909; 29: 1-10, 83-114.
65. Fastlicht S. Supernumerary teeth and malocclusion. *American Journal of Orthodontics* 1943; 29: 623-637.
66. Morgan GA. Unusual cases: recurring impacted supplemental mandibular bicuspid. *Journal of the Canadian Dental Association* 1951; 17: 84-87.
67. Garvey MT, Barry HJ, Blake M. Supernumerary teeth—an overview of classification, diagnosis and management. *J Can Dent Assoc* 1999;65:612–6.
68. Ferguson NC, Worth HM, Dillabaugh GH. An investigation of the occurrence of diastemata and supernumerary teeth. *Journal of the American Dental Association* 1973; 87: 1409-1410.
69. MacPhee GG. The incidence of erupted supernumerary teeth in consecutive series of 4,000 school children. *British Dental Journal* 1935; 58: 59-60.
70. Hurlen B, Humerfelt D. Characteristics of premaxillary hyperdontia. A radiographic study. *Acta Odontologica Scandinavica* 1985; 43: 75-81.
71. Winter GB. Symposium on aspects of the dental development of the child. 3. Local pathological conditions influencing the development of the upper labial segment. *Dental Practitioner* 1966; 17: 153-159.
72. Howard RD. The unerupted incisor, a study of the postoperative eruptive history of incisors delayed in their eruption by supernumerary teeth. *Dental Practitioner and Dental Record* 1967; 17: 332-341.
73. Howard RD. Maxillary anterior displacement and impaction in the mixed dentition. *Dental Clinics of North America* 1978; 22: 635-645.
74. Mitchell L, Bennett TG. Supernumerary teeth causing delayed eruption—A retrospective study. *British Journal of Orthodontics* 1992; 19: 41-46.
75. Solares R. The complications of late diagnosis of anterior supernumerary teeth: Case report. *Journal of Dentistry for Children* 1990; 57: 209-211.
76. Day RB. Supernumerary teeth in the premaxillary region. *British Dental Journal* 1964; 116: 304-308.
77. DiBiase DD. Midline supernumerary and eruption of the maxillary central incisor. *Dental Practitioner and Dental Record* 1969; 20 (1): 35-40.
78. Marre JM. Supernumerary teeth. *Journal of the American Dental Association* 1940; 27: 212-214.
79. Mitchell L. Supernumerary teeth. *Dental Update*, 1989; 16: 65-69.
80. Bergstrom K. An orthopantomographic study of hypodontia, supernumeraries and other anomalies in school children between the ages of 8-9 years: an epidemiological study. *Swedish Dental Journal* 1977; 1: 145-157.
81. Tinn CA. Excess, deficiency and gemination in the deciduous and permanent dentitions of school children. *British Dental Journal* 1940; 68: 236-238.
82. Montelius GA, Wahlquist NF. Supernumerary tooth bud which developed into a cyst. *North-West Dentistry* 1946; 25: 151-165.
83. Koch H, Schwartz O, Klausen B. Indications for surgical removal of supernumerary teeth in the premaxilla. *International Journal of Oral and Maxillofacial Surgery* 1986; 15 (3): 273-281.
84. Turner CH. Subacute pericoronitis from an unerupted supernumerary third molar. *Oral Surgery, Oral Medicine, and Oral Pathology* 1978; 45 (1): 29-31.
85. Eley BM. Periodontitis occurring with supernumerary molars. *Journal of Dentistry* 1974; 2: 167-170.
86. Hou GL, Lin CC, Tsai CC. Ectopic supernumerary teeth as a predisposing cause in localized periodontitis. Case report. *Australian Dental Journal* 1995; 40 (4): 226-228.
87. Levy H. Impacted second, third, fourth and fifth molars. *Oral Surgery* 1978; 45 (3): 489.
88. Zvolanek JW, Spotts TM. Supernumerary mandibular premolars, report of cases. *Journal of the American Dental Association* 1985; 110: 721-723.
89. Stanley HR, Diehl DL. Ameloblastic potential of follicular cysts. *Oral Surgery* 1965; 20: 260-268.
90. Spengos MN. Third molar resorption with supernumerary molar. *Oral Surgery, Oral Medicine and Oral Pathology* 1972; 33 (4): 670.
91. Huffman GG, Thatcher JW. Supernumerary tooth. *Oral Surgery, Oral Medicine and Oral Pathology* 1974; 37 (5): 826-827.
92. Jokela M. Rapid root resorption in central incisor caused by a supernumerary tooth. A case report. *Proceedings of the Finnish Dental Society* 1976; 72: 56-59.
93. Wood GD, Mackenzie I. A dent-nasal deformity. *Oral Surgery, Oral Medicine and Oral Pathology* 1987; 63: 656-657.

94. Sanei-Moghaddam A, Hyde N, Williamson P. Endoscopic removal of a supernumerary tooth from the nasal cavity in an adult. *Br J Oral Maxillofac Surg* 2009;47:484–5.
95. Spyropoulos ND, Patsakas AJ, Angelopoulos AP. Simultaneous presence of partial anodontia and supernumerary teeth. *Oral Surgery, Oral Medicine, and Oral Pathology* 1979; 48 (1): 53-56.
96. Folio J, Smilack ZH, Roberts MW. Clinical management of multiple anterior supernumerary teeth: report of case. *Journal of Dentistry for Children* 1985; 52: 370-373.
97. Tay F, Pang A, Yuen S. Unerupted maxillary anterior supernumerary teeth: report of 204 cases. *Journal of Dentistry for Children* 1984; 51: 289-294.
98. Humerfelt D, Hurlen B, Humerfelt S. Hyperdontia in children below four years of age: A radiographic study. *Journal of Dentistry for Children* 1985; 52: 121-124.
99. Langlais RP, Langland OE, Morris CR. Radiographic localization techniques. *Dental Radiography and Photography* 1979; 52: 69-77.
100. Mallineni SM, Nuvvula S. Management of supernumerary teeth in children: A narrative overview of published literature. *Journal of Cranio-Maxillary Diseases* 2015; 4(1): 62-68.
101. Shah A, Gill DS, Tredwin C, Naini FB. Diagnosis and management of supernumerary teeth. *Dent Update* 2008;35:510- 512, 514- 516, 519- 520.
102. Ramesh K, Venkataraghavan K, Kunjappan S, Ramesh M. Mesiodens: A clinical and radiographic study of 82 teeth in 55 children below 14 years. *J Pharm Bioallied Sci* 2013;5(Suppl 1):S60- S62.
103. Mallineni SK. Supernumerary teeth: Review of the literature with recent updates. *Conference Papers in Science*, 2014, Article ID 764050, 6 2014. doi: 10.1155/2014/76405.
104. DiBiase DD. The effects of variations in tooth morphology and position on eruption. *Dental Practitioner and Dental Record* 1971; 22: 95-108.
105. Chadwick BL, Hunter ML. The management of conical midline supernumerary teeth in a young child. *Dental Update* 1990; 17: 434.
106. Munns D. Unerupted incisors. *British Journal of Orthodontics* 1981; 8: 39-42.
107. Nuvvula S, Melkote TH, Mohapatra A, Nirmala SV. Impacted mandibular permanent incisors related to supernumerary teeth: A rare condition. *Pediatr Dent* 2012;34:70- 3.
108. Högström A, Andersson L. Complications related to surgical removal of anterior supernumerary teeth in children. *ASDC J Dent Child* 1987;54:341- 3.
109. Amaral D, Muthu MS. Supernumerary teeth: Review of literature and decision support system. *Indian J Dent Res* 2013;24:117- 22.
110. Cangialos TJ. Management of a maxillary central incisor impacted by a supernumerary tooth. *Journal of the American Dental Association* 1982; 105: 812-814.
111. Chevitaress AB, Tavares CM, Primo L. Clinical complications associated with supernumerary teeth: Report of two cases. *J Clin Pediatr Dent* 2003;28:27- 31.
112. Omer RS, Anthonappa RP, King NM. Determination of the optimum time for surgical removal of unerupted anterior supernumerary teeth. *Pediatr Dent* 2010;32:14–20.
113. Brin I, Zilberman Y, Azaz B. The unerupted maxillary central incisor-review of its etiology and treatment. *Journal of Dentistry for Children* 1982; 49: 352-356.
114. Mínguez- Martínez I, Ata- Ali J, Bonet- Coloma C, Peñarrocha- Oltra D, Peñarrocha- Diago MA, Mínguez- Sanz JM. Management and outcome following extraction of 303 supernumerary teeth in pediatric patients. *Pediatr Dent* 2012;34:136- 9.
115. Cochrane SM, Clark JR, Hunt NP. Late developing supernumerary teeth in the mandible. *British Journal of Orthodontics* 1997; 24 (4): 293-296.
116. Mohan S, Kankariya H, Fauzdar S. Impacted inverted teeth with their possible treatment protocols. *J Maxillofac Oral Surg* 2012;11:455- 457.
117. Bodin I, Julin P, Thomsson M. Hyperodontia I. Frequency and distribution of supernumerary teeth among 21,609 patients. *Dentomaxillofacial Radiology* 1978; 7: 15-17.
118. Stermer Beyer- Olsen EM. Premaxillary hyperdontia in medieval Norwegians: A radiographic study. *Dentomaxillofac Radiol* 1989;18:177- 179.
119. Patchett CL, Crawford PJ, Cameron AC, Stephens CD. The management supernumerary teeth in childhood-a retrospective study of practice in Bristol Dental Hospital, England and Westmead Dental Hospital, Sydney, Australia. *Int J Paediatr Dent* 2001;11:259- 265.
120. Mallineni SK, Jayaraman J, Yiu CK, King NM. Concomitant occurrence of hypohyperdontia in a patient with Marfan syndrome: A review of the literature and report of a case. *J Invest Clin Dent* 2012;3:253- 257.

121. Poyton GH, Morgan GA, Crouch SA. Recurring supernumerary mandibular premolars. Report of a case of postmature development. *Oral Surgery, Oral Medicine, and Oral Pathology* 1960; 13: 964-966.
122. Bodenham RS. The treatment and prognosis of unerupted maxillary incisors associated with the presence of supernumerary teeth. *British Dental Journal* 1967; 123: 173-177.
123. Ohman I, Ohman A. The eruption tendency and changes of direction of impacted teeth following surgical exposure. *Oral Surgery* 1980; 49: 383-389.
124. Hattab FN, Yassin OM, Rawashdeh MA. Supernumerary teeth: Report of three cases and review of the literature. *Journal of Dentistry for Children* 1994; 61: 382-393.