

Incidence of Eruption Status of Third Molars and its Correlation with the Gonial Angle in Gujarati Population

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Abstract- AIM- The main is to access the eruption status of 3rd molar and its correlation to the gonial angle in correlation with gender determination in Gujarati population

Material and Methods- A total of 100 OPGs (Orthopantomograms) of equal gender (50 male, 50 female) distribution were obtained. Computer aided image processing software was used to analyze the position of third molars in all the 4 quadrants with respect to alveolus. Gonial angle measurement was also done digitally. Statistical analysis was carried to find to find correlation between the Gonial angle and Third molar.

Results – The result were statistically analyzed by t-test (independent t-test) and ANOVAs test. The expected number of molars of 100 patients i.e. 400 only 281 molars (46.83%) completely erupted and 130 molars (21.66%) failed to erupt.

Keywords- Eruption, Impaction, Third molar, Gonial angle

I. INTRODUCTION

Since the time is passing and generations are changing ones our body is also changing in the same way from generations to generations. Our main focus here is in the changes taking place in the oral cavity due to changing environment and chewing habits. People nowadays consume soft diet compared to past generations who used to eat raw food, fruits and vegetables. The soft food lessens the workload for the jaw and leads to depletion of its size.[2] The smaller jaw further does not give sufficient space for the eruption of the wisdom tooth.[1] whereas in case of age estimations of adolescents and young adults, third molars are the only teeth developing and all other methods to assess age are of questionable value as the fusion of sutures, fusion of epiphysis of bones, and attainment of secondary sex characteristics have already been taken place by middle teens and early twenties. When no valid document with the recorded age is available then third molar becomes the most useful tooth to determine the juvenile and adult status of an individual. Human jaws has drastically changed its size from large to small so there is no sufficient space for eruption all the teeth, and so because of insufficient space third molar impaction most commonly seen.

Impacted teeth failed to erupt because of malposition, lack of space, or other impediments. [2]Third molar erupt 3 to 6 months before in male than female.[3]. Third molar play important role in clinical work because of its retention that helps in orthodontic treatment and prosthetic treatment [4] Variations are also seen in the gonial angle with the age. At birth gonial angle shows obtuse angle and at the childhood its seen acute angle while in old age it increases because of loss of tooth and resorption.[5][6]

II. MATERIAL AND METHOD-

In this study, a total of 100 (OPGs) Orthopentomogaram of 50 male and 50 female patients were taken from different dental clinics and radiology centre with proper consent and formalities. The age criteria were between 18 to 26 year which were further divided into 2 groups 18 to 21 and 22 to 26 years for proper age estimation. Measurement of the gonial angle of both right and left mandibular jaws was evaluated with the help of image J software. The inclusive and exclusive criteria are as below for the selections of the radiographs.

2.1 The inclusion criteria

- The patient's age limit for the OPG was between 18-26 years.
- The maxillary and mandibular third molars should be present
- The Gender of the patient should be known
- The Angulation of the impacted teeth (type/pattern of impaction) is observable

2.2 The exclusion criteria

- The OPGs of patients with any systemic condition were excluded

- The OPGs of patients with history of trauma
- The agenesis Of Maxillary and Mandibular third molars

Impaction was observed based on the third molar to long axis of the second molar (winters classification)[7][8](Figure 1) The Image shows different position of the third molar in relation with the angle of the mandible like mesioangular, distoangular , horizontal angulation,etc All the OPGs were observed for the position of the 3rd molar w.r.t to the winter's classification .Measurement of gonial angle were also noted as shown (figure 2) The digital OPGs were evaluated in the image j software programme and the tool button for the angle measurement was selected. The yellow line was dragged from the top of the mandible condyle head and at the angle of the mandible again draw the line and stretch it to the lower border of the mandible after that control+M was pressed, which displays measurement of the gonial angle and saves it in word format.

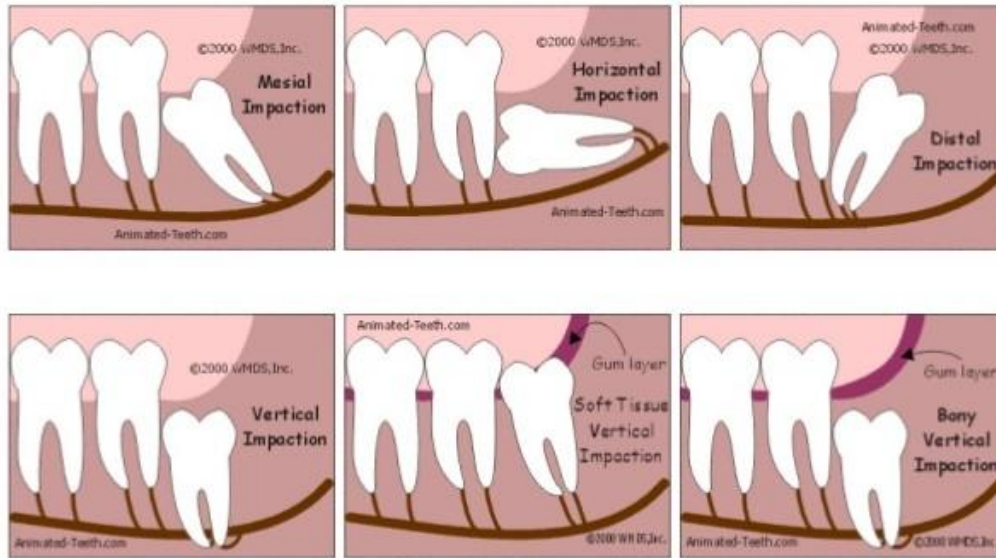


Figure 1: Winter's classification (Impaction of third molar)



Figure 2: Measurement of Gonial Angle

III. RESULTS

The Study population consisted of 100 patients aged between 18-26 years. Out of which 50 male and 50 female were taken in consideration. Out of the expected number of molars 100 patients i.e. 400 only 281 molars (46.83%) completely erupted and 130 molars (21.66%) failed to erupt. Further it proved that, in 281 erupted teeth 153(54.44%) have erupted in upper jaw and 128(45.55%) teeth erupted in lower jaw.

The overall prevalence of impacted upper and lower third molar was 130.

The arch wise distribution of third molar impaction in this study showed greater predilection towards mandible 81 (63.07%) than the maxilla 49 (36.92%) (P value < 0.001 which is statistically significant). (Figure 3)

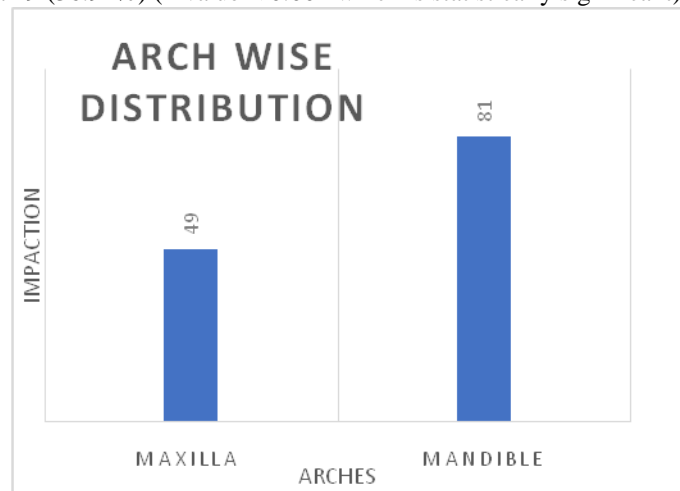


Figure 3: Prevalence of impaction of 3rd molar with respect to the arch

Gender wise distribution of impaction showed a predilection towards females 67 (51.53%) than males 63 (48.46%).

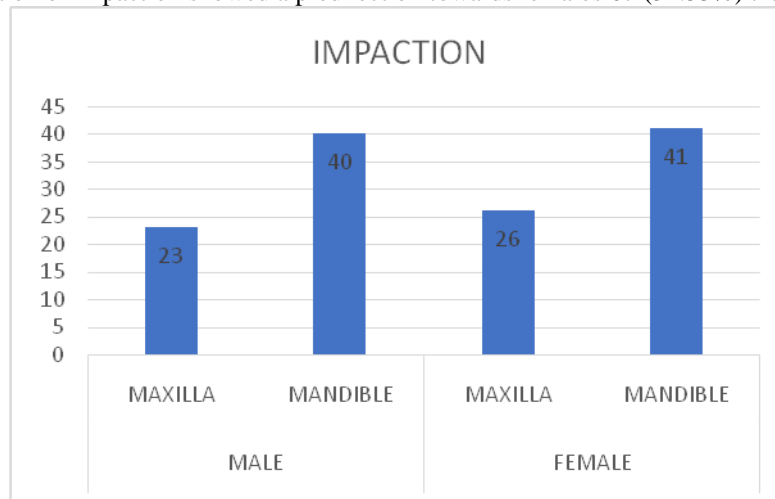


Figure 4: Prevalence of Impaction with respect to Gender

The other findings in relation to the impacted third molars are listed below:

- The most commonly impacted teeth were 38 and 48
- The most common pattern of impaction was Mesio-angular.
- Third molar impaction more prevalent in mandibular arch than maxillary arch

(Figure 3)

- Most common impaction in Male is Quadrant third.(figure 5)
- Most common impaction in Female is Quadrant four.(figure 5)

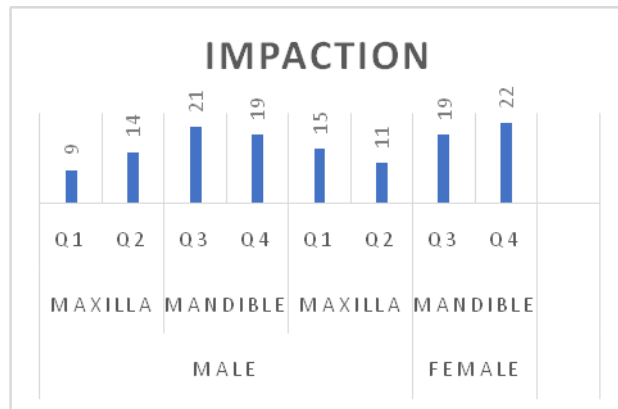


Figure 5: Prevalence in relations to the gender along with the quadrant

- There was no correlation between impacted 3rd molars and the correspondent gonial angle. (figure 7,8)

ANOVA

GaR

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	57.937	3	19.312	.341	.795
Within Groups	5714.565	101	56.580		
Total	5772.501	104			

Test of Homogeneity of Variances

Ga

Levene Statistic	df1	df2	Sig.
.895	3	101	.447

ANOVA

Ga

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	81.627	3	27.209	.524	.666
Within Groups	5240.138	101	51.883		
Total	5321.765	104			

Figure 8 : Statically analysis of correlation of gonial angle and the third molar

IV. DISCUSSION

Till date , there were very few studies seen related to eruption status of third molar in Gujarati population aged between 18-26 years. This study give brief idea regarding the eruption status of third molars and correlation with gonial angle. Third molar is most commonly impacted seen because of insufficient space and abortive path of

eruption [9]. The clinical significance of impacted 3rd molars are mainly a crowded dentition, pericoronitis, pressure resorption of roots of adjacent 2nd molars, dental caries involving both 2nd and 3rd molars. The arch wise distribution of third molar impaction in this study showed greater predilection towards mandible 82(63.07%) than the maxilla 48(36.92%) (p value < 0.001 which is statistically significant). This was also in accordance with other studies by Quek et al., Kanneppady et al., and Syed et al. [7, 8, and 11]. Venu Gopal conducted a comparative study on impacted third molars in the South Indian population which showed greater predisposition towards the mandible, which also supported our findings [12] study by Pushparaja et al. [4] also showed similar findings. Hashemipour study on Iranian population also showed a mandibular arch predilection [13].

In this study, mesioangular impaction (66.92%), distoangular impaction (17.69%) and horizontal angulation was (15.38%). Study conducted in Singapore Chinese population showed similar findings [7]. Hashemipour study on Iranian population showed the most leading pattern of impaction in the mandible was mesio-angular impaction [13]. These findings support the results of the present study. Gender wise distribution of impaction showed a predilection towards females 67(51.53%) than males 63(48.46%). Which was in consonance with the study on third molars done by Pushparaja et al. [4] whereas in contradiction to the result in a study done by Ramamurthy, et al. [14]. The most commonly impacted teeth were 38 and 48. The rate of third molar impactions is increasing at an alarming rate with the progress of evolution. In the course of evolution, the tooth bud of the third molar might become completely absent due to lack of space because of decrease in jaw size and loss of interproximal attrition, tooth loss due to use of refined soft diet. In this study we also measured the gonial angle of right and left side of the mandible and according to statistical analysis there is no correlation seen between impacted third molar and gonial angle. (Figure 7)

V. CONCLUSION

From the above study, we concluded that

- Third molar impaction is more prevalent in mandibular region than than maxillary arch.
- Most common impaction in male is quadrant third.
- Most common impaction in female is quadrant four.
- Most commonly impacted teeth were 38 and 48.
- Mesioangular impaction of third molar was found to be in higher incidence in both males and females.
- There was no correlation between impacted 3rd molars and the correspondent gonial angle.
- Distoangular is very rarely seen in mandibular arch.
- Horizontal angulation most commonly seen in female (48) in fourth quadrant.

VI. REFERENCES

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