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ORIGINAL ARTICLE

ASSESSMENT OF CORRELATION OF ABO BLOOD GROUPING AND IMPACTED THIRD MOLARS: A BLIND TRIAL

Deepak Narang[1], Abhishek Singh Nayyar[2], Piyush Gandhi[3]

[1]Senior Lecturer, Oral Medicine & Radiology, Azamgarh Dental College, Itaura, Azamgarh, Uttar Pradesh, [2]Reader, Oral medicine & radiology, Saraswati Dhanwantari Dental College and Hospital, Parbhani, Maharashtra, [3]Senior Lecturer, Oral Pathology, Dasmesh Institute of Research & Dental Sciences, Faridkot, Punjab

ABSTRACT:

Background: The role of blood group substance and its subsequent role in forensic cases is based on the fact that once a blood group of an individual is established, it remains constant throughout his life. Eruption is defined as the movement of the tooth from its site of development in alveolar bone to the occlusal plane in the oral cavity. Mandibular third molars, or wisdom teeth, are the most frequently congenitally impacted teeth. Hence, assessed the correlation of ABO blood grouping and impacted third molars. **Materials & Methods:** Total 510 patients impacted third molar teeth were included in this study. Patients were broadly divided into maxillary third molar impacted patients and with mandibular third molar impaction. Examination of blood samples was done for the assessment of blood groups of the patients. The Rh - group was excluded from the study due to insignificant number. All the results were analysed using SPSS software. Paired't'- test was used to assess the level of significance. **Results:** Out of 250 patients, 62 had A positive blood group, 52 had B positive blood group, 66 had O positive and 70 had AB positive blood group. However, no significant results were obtained on comparing the distribution of different blood groups in maxillary third molar impacted patients (p-value>0.05). Out of 250 patients, 59 had A positive blood group, 56 had B positive blood group, 60 had O positive and 75 had AB positive blood group. However, no significant results were obtained on comparing the distribution of different blood groups in mandibular third molar impacted patients (p-value>0.05). On comparing between the maxillary arch and the mandibular arch, no statistically significant results were obtained in relation to distribution of various blood groups. **Conclusion:** No relation exists between the third molar impaction and ABO blood grouping system

Key words: Blood group, Impacted, Molar

Corresponding author: Dr. Deepak Narang. Senior Lecturer, Oral Medicine & Radiology, Azamgarh Dental College, Itaura, Azamgarh, Uttar Pradesh

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INTRODUCTION

The word Forensic is derived from a Latin word "forensis" which means public, and forensic science refers to areas of endeavour that can be used in judicial setting and accepted by the court and general scientific community to separate truth from untruth.[1] Identification of unknown humans have always been of indispensible importance to society because human identification is a mainstay of civilization. Importance of dental tissues in the field of forensic has been well recognized because of the fact that tooth is hardest of all human tissues and they can be preserved intact for a long period of time after death.[2] The role of blood group substance and its subsequent role in forensic cases is based on the fact that once a blood group of an individual is established, it remains constant throughout his life.[3] Eruption is defined as the movement of the tooth from its site of development in alveolar bone to the occlusal plane in the oral cavity.[4] Mandibular third molars, or wisdom

teeth, are the most frequently congenitally impacted teeth.[5] Blood type AB contains both A and B antigens but no antibodies. Blood type O has no antigens but contains both anti -A and anti –B antibodies. Anti -A and anti -B antibodies are usually IgM type, and not present in newborns, but appear in the first year of life. It is possible that the antibodies are produced against food and environmental antigens (bacterial, viral or plant antigens).[6] Hence, assessed the correlation of ABO blood grouping and impacted third molars.

MATERIALS & METHODS

A total of 510 patients reporting in the dental OPD of the institution with the chief complaint of pain due to impacted third molar teeth were included in this study. Patients were divided into two groups: Group A comprising of patients undergoing maxillary third molar extraction and Group B comprising of patients undergoing mandibular third molar extractions. Blood samples of the patients were taken and their blood group were examined. ABO blood grouping system was used as standard blood grouping system and all the patients were divided into four groups; O, A, B and AB blood group. Patients with any other systemic illness and any known drug allergy were excluded from the study. Blood groups were further divided into Rh + and Rh – blood groups. Venepuncture was done to obtain the blood sample from the patients. The blood samples were collected into EDTA-containing test tube until blood group examination was done. However, only 10 patients were found to be Rh -. Therefore, the Rh - group was excluded from the study due to insignificant number. All the results were analyzed using SPSS software. Paired‘t’- test was used to assess the level of significance.

RESULTS

The distribution of patients with impacted maxillary third molar is shown in **Table 1.** Out of 250 patients, 62 had A positive blood group, 52 had B positive blood group, 66 had O positive and 70 had AB positive blood group **(Graph 1)**. However, no significant results were obtained on comparing the distribution of different blood groups in maxillary third molar impacted patients (p-value>0.05). The distribution of patients with impacted mandibular third molar is shown in **Table 2.** Out of 250 patients, 59 had A positive blood group, 56 had B positive blood group, 60 had O positive and 75 had AB positive blood group **(Graph 1)**. However, no significant results were obtained on comparing the distribution of different blood groups in mandibular third molar impacted patients (p-value>0.05). On comparing between the maxillary arch and the mandibular arch, no statistically significant results were obtained in relation to distribution of various blood groups as shown in **Table 3**.

DISCUSSION

One of the corner stone of biological identification is the blood grouping system. The term “Blood group” is applied to inherited antigens detected on the red cell surface by specific antibodies.[4] Karl Landsteiner in 1900 was the first to describe the ABO blood group system and since then, it has remained the bulwark of forensic blood group investigation. The reasons for this are manifold. It is the primary, most common, conspicuous, and easily detectable groups.[5] Although a lot of advancements have been seen in the field of DNA analysis, blood grouping still has a major role in forensic science in the field of person identification, paternity dispute, and other scenarios. This is attributed to the fact that genetic and antigenic constituents of an individual are not affected by environmental conditions.[6] Lattes has aptly said “The fact that belonging to a definite blood group is a fixed character of every human being and can be altered neither by the lapse of time nor by intercurrent disease”. Blood group like fingerprint is an unalterable primary character.[7] Teeth being the hardest of all tissues can be preserved intact for long periods of time after death. They are stable chemically and they retain their characteristic even in the most adverse condition.[8] The presence of blood group substances and other genetic markers such as enzymes in soft and hard dental tissues makes it possible to assist in the identification of highly decomposed bodies.[9] Hence, we assessed the correlation of ABO blood grouping and impacted third molars. We observed that in both maxillary and mandibular arch, presence of a specific type of blood group was independent of the presence of impacted third molars (**Table1 and 2**). Also, on comparing between maxillary and mandibular arches, no significant results were seen (**Table 3**). Al-Molla et al evaluated the effect of ABO blood grouping system on the eruption of wisdom tooth and observed that there existed no relationship between the blood grouping system and the eruption of the lower wisdom tooth.[10] This is the first study in our knowledge assessing the correlation of impacted third molars and ABO blood grouping system. Further research with larger study group and more parameters is required in this field to explore the correlation of blood grouping system and impacted third molars.

Table 1: Distribution of blood groups of various patients undergoing Maxillary third molar extraction.

Blood group	Number of patients (N)	t-value	p-value
A	62	4.51	0.5125
B	52	4.52	(N.S)
O	66	6.81	
AB	70	7.16	

N.S: Non Significant

Table 2: Distribution of blood groups of various patients undergoing Mandibular third molar extraction.

Blood group	Number of patients (N)	t-value	p-value
A	59	5.95	0.4258
B	56	7.85	(N.S)
O	60	4.48	
AB	75	6.71	

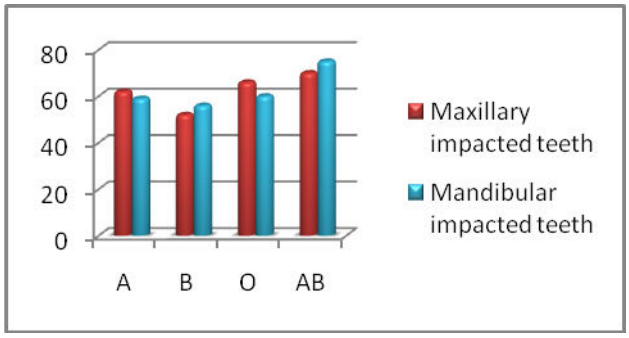
N.S: Non Significant

Table 3: Blood group comparison of patients undergoing maxillary third molar extraction versus patients undergoing mandibular third molar extraction.

Jaw	t-value	p-value
Maxillary	8.415	1.514
Mandibular		(N.S)

N.S: Non Significant

Graph 1: Distribution of blood groups of various patients undergoing maxillary and mandibular third molar extraction.



CONCLUSION

From the above results, we conclude that no relation exists between the third molar impaction and ABO blood grouping system. Further research is advocated.

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